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PROCEEDINGS,
OF THE
STATEN ISLAND ASSOCIATION
OF ARTS AND SCIENCES

VOLUME III

OCTOBER 1909—MAY 1911

EDITED BY THE PUBLICATION COMMITTEE

PHILIP DOWELL, CHAIRMAN
ARTHUR HOLLICK, WILLIAM T. DAVIS

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TABLE OF CONTENTS

PART I. OCTOBER–DECEMBER, 1909

Issued April 28, 1911

	PAGE
List of the Macrolepidoptera of Staten Island, New York	WILLIAM T. DAVIS I
Notes on Specimens Recently Collected in the Serpentine Area of Staten Island	ARTHUR HOLLICK 31
Notes on the White-breasted Nuthatch...	WILLIAM T. DAVIS 34
The Disputed Claim of the Proprietors of East Jersey to Staten Island	EDWARD C. DELAVAN, JR. 37
Records of Meetings	
Regular Meeting, October 16, 1909	49
Regular Meeting, November 20, 1909	51
Regular Meeting, December 18, 1909	52
Proceedings of the Section of Biology	
October 20, 1909 (Special Meeting)	53
November 20, 1909 (Regular Meeting of the Association, held under the auspices of the Section of Biology)	53

PART II. JANUARY–MAY, 1910

Issued May 2, 1911

Two Seasons' Photographic Work with Sandpipers at Wolfe's Pond	HOWARD H. CLEAVES 55
Notes on Introduced Plants Collected near Arlington, Staten Island	ARTHUR HOLLICK 62
An Addition to the List of Staten Island Frogs	WILLIAM T. DAVIS 66

	PAGE
Do Not Burn the Woods	WILLIAM T. DAVIS 68
The Redwing Changes its Nesting Site . .	HOWARD H. CLEAVES 71
Literature Relating to Staten Island	
Anthropological Papers of the American Museum of Natural History	73
The Birds of New Jersey	74
Dowell's Violets of Staten Island	74
Annual Report of the Board of Education of the City of New York	75
Gratacap's Geology of the City of New York	76
Notes in Connection with Specimens Recently Obtained from the Serpentine of Staten Island	79
Running Away from Folks	80
William Winter, the Dean of American Dramatic Critics	80
The Staten Island Museum	81
Records of Meetings	
Regular Meeting, January 15, 1910	82
Regular Meeting, March 19, 1910	83
Regular Meeting, April 16, 1910	84
Annual Meeting, May 21, 1910	85
Annual Reports	
Report of the Board of Trustees	88
Report of the Executive Committee	91
Report of the Auditing Committee	91
Report of the Publication Committee	91
Report of the Curator-in-chief	92
Report of the Secretary	102
Report of the Treasurer	103
Report of the Museum Committee	104
Report of the Committee on Accessions	104
Report of the Women's Auxiliary Committee	104
Report of the Section of Biology	105
Report of the Section of Art	105
Report of the Section of Historical Research	107
Proceedings of the Section of Biology	
March 12, 1910	108
April 9, 1910	108

PART III. OCTOBER-FEBRUARY, 1911

Issued February 15, 1912

	PAGE
Changes and Inconsistencies in the Spelling of Local Place Names by the United States Geological Survey.	
ARTHUR HOLLICK	109
Miscellaneous Observations on the Natural History of Long Island, N. Y.	WILLIAM T. DAVIS 113
The Least Shrew in Captivity	HOWARD H. CLEAVES 116
The Seventeen-year Cicada on Staten Island between the Years 1894 and 1911	WILLIAM T. DAVIS 120
The Possibilities and Limitations of Nature Study in the Public Schools	HOWARD H. CLEAVES 123
Conservation, the National Issue...	CHARLES LOUIS POLLARD 128
Our Forest Trees	CARL PHILIP DOWELL 144
Records of Meetings	
Regular Meeting, October 15, 1910	148
Regular Meeting, November 19, 1910	150
Regular Meeting, December 17, 1910	150
Regular Meeting, January 21, 1911	151
Regular Meeting, February 18, 1911	152

PART IV. MARCH-MAY, 1911

Issued April 25, 1912

Salt Meadow Beetles	CHARLES W. LENG 153
Additions to the Flora of Staten Island....	PHILIP DOWELL 156
Notes on Some Staten Island Ferns	PHILIP DOWELL 163
John J. Crooke: a Staten Island Naturalist, WILLIAM T. DAVIS	169
Literature Relating to Staten Island	
List of New York Mineral Localities	173
Aboriginal Place Names of New York	173
Acquisition by New York City of the Larger Two Water Systems of Staten Island	174
The Fossil Flora of New York and Vicinity	175
Two Popular Articles on the Chestnut Disease	175

	PAGE
Staten Island Association of Arts and Sciences. Public Museum	175
A New <i>Prepinus</i> from Martha's Vineyard	176
The Toads of the Northeastern United States	177
The Kingfisher at Home	177
The Bird of the Silent Wing	178
Staten Island Bird Notes and Pictures	178
On the Affinities of the Genus <i>Yezonia</i>	179
The Affinities of <i>Geinitzia gracillima</i>	180
Records of Meetings	
March 25, 1911 (Reception and formal opening of the new building, held in place of the regular meeting) ..	181
Regular Meeting, April 15, 1911	181
Annual Meeting, May 20, 1911	182
Annual Reports	
Report of the Board of Trustees	183
Report of the Executive Committee	185
Report of the Museum and Library Committee	185
Report of the Committee on Accessions	185
Report of the Women's Auxiliary Committee	185
Report of the Publication Committee	185
Report of the Curator-in-chief	186
Report of the Secretary	193
Report of the Treasurer	193
Report of the Section of Biology	194
Report of the Section of Art	195
Report of the Section of Historical Research	195

INDEX

Titles and Subjects	197
Scientific and Common Names	203

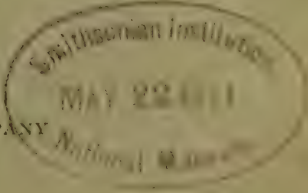
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CONTENTS

List of the Macrolepidoptera of Staten Island, New York . .	WILLIAM T. DAVIS	1
Notes on Specimens Recently Collected in the Serpentine Area of Staten Island	ARTHUR HOLLICK	31
Notes on the White-breasted Nuthatch	WILLIAM T. DAVIS	34
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THE NEW ERA PRINTING COMPANY
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PROCEEDINGS
OF THE
STATEN ISLAND ASSOCIATION
OF
ARTS AND SCIENCES

VOL. III

OCTOBER-DECEMBER, 1909

PART I

List of the Macrolepidoptera of Staten Island, New York

WILLIAM T. DAVIS

It is not supposed that the following list is complete, and many additions are expected, but on the other hand some of the species mentioned will probably not again be found, owing to the city conditions which are prevailing over an ever wider area of the island.

Thecla augustus is one of the butterflies that has steadily decreased in numbers, owing probably to the frequency of forest fires. Some other species, as *Colias cacsonia*, have been found on the island during only a single summer, and still others, like *Terias nicippe* and *Pyrameis cardui*, sometimes occur in considerable numbers and have then not been seen again for several years. As a rule Lepidoptera are more numerous when the summer is rather dry, thus preventing a great mortality to the larvae through fungus diseases. These were the conditions in several of the years covered by this record, notably the summers of 1901 and 1910. So the years differ considerably from one another to a collector of insects, who goes afield ever expecting a surprise.

In the following list, the months when the insects were collected have been mentioned, and for the greater part the notes that accompanied portions of the list previously published have

been included.¹ Some of the more important records have also been recorded in the second and third editions of Prof. J. B. Smith's New Jersey list. The specimens have been compared in many instances with those in various public museums and private collections, and several specialists have done me the honor of looking carefully over my collection. The identifications are therefore doubtless generally correct. Mr. Charles P. Benedict, of West New Brighton, and Mr. Oscar Fulda, of Stapleton, have added some species to the list, and the names of several other collectors are mentioned in connection with the species obtained by them.

Family NYMPHALIDAE

Danais plexippus Linnaeus. May to November inclusive. I have never found any hibernating on the island. The first individuals to arrive are usually females, although males have been taken in May. They do not become numerous before August. On September 29, 1889, fourteen of these butterflies were counted about a single plant of the New England aster, and their terra cotta colors contrasted well with the purple flowers. They are often quite common on the seashore and alight on seaweed and other objects cast up by the waves. On November 25, 1894, a male was found in a sheltered situation on the side of a bank at Tottenville. It was a fresh, bright specimen, and had evidently been frozen to death. Probably none of our butterflies fly higher than this one, often among the swallows. It does not always beat its wings but sails with them spread in somewhat the same manner as do many birds. What may possibly be called a migration of this species was observed on August 27, 1885, when many monarch butterflies were seen flying slowly westward along a

¹ The following partial lists have been previously published: Butterflies of Staten Island, Proc. Nat. Sci. Assoc. Staten Island 1: 5. F 1884; Catalogue of the Butterflies of Staten Island, New York, Journ. N. Y. Ent. Soc. 1: 1. Mr 1893; Staten Island Hawk Moths, Proc. Nat. Sci. Assoc. Staten Island 8: 47-48. Ja 1903; Preliminary List of Staten Island Moths Belonging to the Families Saturniidae, Ceratocampidae, Syntomidae, Arctiidae, and Agaristidae, Proc. Nat. Sci. Assoc. Staten Island 9: 15-16. Mr 1904.

road. The day before had been cold for a day in August. The New York papers of September 8, 1899, contained articles on the invasion of the city by butterflies. It was a migration of this species, and on the date mentioned we found them at 9 a.m. settled quietly on an ailanthus tree in Battery Park. Very few were flying about until a ball made of newspaper was cast into the tree, when there was a great display of fluttering butterflies, a hundred or more hovering about the tree.

Euptoieta claudia Cramer. This is not a common species on the island. Less than a dozen specimens have been seen and these usually in late summer and fall. The earliest record is July 11, at Richmond Valley. Two specimens were observed by Mr. Charles L. Pollard at Dongan Hills on September 18, 1910.

Argynnis idalia Drury. Last days of June through July, August, and September.

Argynnis cybele Fabricius. June, July, August, and September. The males appear in numbers in June a day or so before the females.

Argynnis aphrodite Fabricius. A single specimen taken on June 29. One seen at close range in the Clove Valley by Mr. Frank E. Watson on August 2, 1908.

Argynnis myrina Cramer. May to September inclusive.

Argynnis bellona Fabricius. June, July, and August. Formerly found in the Clove Valley, but none have been seen there in recent years. Mr. Frank E. Watson collected a single specimen in Buck's Hollow on August 7, 1910.

Melitaea phaeton Drury. Has been found in several meadows in May and June, sometimes in considerable numbers.

Phyciodes tharos Drury. Early May to October inclusive. A caterpillar was found near Richmond on March 29, 1903, under a chip. It pupated on the same day, and the butterfly hatched on April 20.

Grapta interrogationis Fabricius. To be seen throughout the warm weather, and occasionally early in the spring.

Grapta comma Harris. Less common than the last, but appearing at the same time.

Grapta progne Cramer. As with the other members of the genus, hibernated examples appear in March and April and fresh specimens in midsummer. While sitting in the sun near Richmond village on February 24, 1906, I noticed a *Grapta* butterfly settle on an oak leaf lying on the ground, intent also upon warming itself in the sun. I tried to draw near in order to identify the species positively, but even with my glass I was not sure, although I thought it was *progne*. The butterfly was very much afraid of me while it was on the ground. When it flew off I noticed that it lit on the fallen branches of a tree about a yard from the ground and that it had closed its wings. It then allowed me to approach, and I saw plainly that it was *progne*. I reached out my hand and picked it off from the branch. It did not struggle, but folded up its legs and kept quiet. So it remained lying flat in my open hand, and I carried it to a sunny place and put it on an oak leaf, where it lay as if dead. After a while it began to tremble, and presently it jumped up and before one could say "*Grapta progne*" had flown away.

Grapta j-album Boisduval & Leconte. Hibernated individuals in early spring and fresh examples in midsummer. About one-half of the specimens taken on the island have been found in dwellings, usually in the fall. It is more apt to enter houses than any other of our native butterflies, not even excepting *Vanessa antiopa*.

Vanessa antiopa Linnaeus. Sometimes seen as early as the latter part of February and as late as November. The red seed clusters of the sumac are sometimes in the spring attractive perching places for individuals that have awakened from their hibernation.

Vanessa milberti Godart. One specimen taken near Silver Lake by Mr. Gustav Beyer in October, 1886. Seen at Clifton by Mr. Oscar Fulda on October 13, 1902, and on September 25, 1910.

Pyrameis atalanta Linnaeus. March to November inclusive. One seen December 13, 1891.

Pyrameis huntera Fabricius. Early spring to November inclusive.

Pyrameis cardui Linnaeus. August, September, and October, but not common. Plentiful in September, 1884. A single example near Richmond, April 24, 1897.

Junonia coenia Hübner. June to November inclusive. Often very common on dusty roads, where it sometimes chases the *Carolina* grasshoppers.

Limenitis ursula Fabricius. Occasional in May, a few in June, common in late July and throughout August, and a few in September. I have found the caterpillars leaving their hibernacula on the first day of May. This, like some other butterflies, is fond of carrion, and is often attracted by decaying fruit. Mr. Alanson Skinner and Mr. James Chapin collected a female specimen of the variety *albofasciata* Newcomb fresh from the chrysalis near Woodrow, August 25, 1907.

Limenitis archippus Cramer. June to September inclusive. On October 9, 1887, a single specimen was seen.

Family SATYRIDAE

Neonympha canthus Boisduval & Leconte. June to September.

Neonympha eurytris Fabricius. Last days of May through June and July to the first days of August.

Satyrus alope Fabricius. June to September inclusive. This butterfly, like the preceding, will sometimes assemble in considerable numbers about an old log or stump and occasionally on the ground.

Family LIBYTHEIDAE

Libythea bachmanni Kirtland. Two seen on August 11, 1888, about the hackberry trees (*Celtis occidentalis*) at the old fort near Richmond village.

Family LYCAENIDAE

Thecla melinus Hübner. May to September inclusive.

Thecla calanus Hübner. June, July.

Thecla damon Cramer. Taken by Mr. Charles W. Leng at Watchogue May 8, 1881.

Thecla augustus Kirby. April and May. Formerly common at Watchogue and other sandy portions of the island, but less plentiful in recent years.

Thecla irus Godart. April and May. It has been found at Watchogue, near Four Corners, on Todt Hill, and in the woods between the Black Horse Tavern and Richmond.

Thecla niphon Hübner. Common on May 8, 1881, along a sandy road at Watchogue. None have been seen since.

Thecla titus Fabricius. July and August.

Feniseca tarquinius Fabricius. Taken by Mr. A. C. Weeks June 21, 1885, and by Mr. R. P. Dow August 4, 1907. Two collected at Woodrow August 21, 1910. The caterpillars are sometimes found in colonies of the woolly plant lice on the alder bushes.

Chrysophanus thoe Boisduval. Three specimens have been found on the island: one in the Clove Valley on June 20, 1896, by Mr. A. C. Weeks; one at Karle's Neck, near New Springville, on September 12, 1897; and one near Chelsea on August 12, 1910.

Chrysophanus hypophlaeas Boisduval. May to October inclusive.

Lycaena ladon Cramer. Including the seasonal forms, from March to September. The forms *lucia*, *marginata*, and *violacea* occur in the spring.

Lycaena comyntas Godart. Last of April to September inclusive.

Family PIERIDAE

Pieris protodice Boisduval & Leconte. Taken on the shore in 1882, near the present location of the St. George ferryhouse. Others have been collected in various parts of the island in June, July, August, and September. The variety *vernalis* Edwards was taken at Tottenville on April 19, 1902.

Pieris napi oleracea Boisduval. The late Mr. August R. Grote has written me as follows: "I believe that I remember clearly

that I took *P. oleracca* on Staten Island between 1856 and 1859." At present the occasional specimen does not attract attention among the similarly colored imported cabbage butterflies.

Pieris rapae Linnaeus. March to November inclusive.

Catopsilia eubule Linnaeus. Usually appears in September about the middle of the month, and in some years is quite common. Two specimens, one of which was captured, were found near the Billopp house, at Tottenville, October 4, 1903.

Colias caesonia Stoll. The dog's head butterfly was unknown in the vicinity of New York City until the summer of 1896. In June of that year Captain Robert D. Wainwright captured a single specimen on the island at Eltingville. On July 11, in a partly overgrown field at Kreischerville, near the Ultramarine works or "Blue factory," as it is locally called, I saw a number of *C. caesonia*. A few hovered about the butterfly weeds (*Asclepias tuberosa*), but most of them were carried across the open ground by the strong breeze then blowing. There was less wind the next day, when the same field was visited, and the butterflies seemed slightly more inclined to light on the *Asclepias*. My plan consisted in sitting under a persimmon tree in the middle of the field, and when a butterfly came into the clearing I tried to catch it. In this way two specimens were captured in about an equal number of hours, and a few others, which were mostly in a great hurry, were seen. The field was again visited on July 25, but the butterflies had disappeared. During this same summer the species was taken for the first time in Canada, near Toronto and in southern Manitoba. Since 1896 it has not been recorded as far north as Staten Island.

Colias eurytheme Boisduval. This butterfly was seen in a field near Richmond on October 20, 1900. As I did not have a net with me the insect escaped, but it was approached to within less than a yard, so the identification is certain.

Colias philodice Godart. April to November inclusive. A single specimen flying on Todt Hill December 6, 1891.

Terias nicippe Cramer. Appeared in June, 1880, and was very common through the summer and fall. Two males were

collected in the fall of 1891, one on September 19 and the other on October 4. A male was collected May 10, 1896, on Todt Hill. In the summer of 1906 the butterfly was seen in some numbers in the Clove Valley, where there is a growth of *Cassia marylandica*, the food plant of the larva; and several males were observed elsewhere on the island. In 1907 about ten were seen, in August, and several collected in Buck's Hollow near Richmond, where *Cassia* also grows. A single male was seen at Chelsea August 12, 1910.

Terias lisa Boisduval. July to October inclusive. Most common on the sandy portions of the island.

Family PAPILIONIDAE

Papilio ajax Linnaeus. This butterfly was observed by Mr. William Beutenmüller and myself on July 5, 1886, near Bull's Head. Another was seen on June 30, 1889, near Old Place, and still another on June 14, 1902, at Tottenville. On August 5, 1902, Mr. Oscar Fulda captured two specimens at Concord.

Papilio philenor Linnaeus. This species has been observed flying on the island on May 6, October 27, and November 2. On the last mentioned date a fresh specimen was seen. It is more common at times between these dates. The appearance of fresh examples apparently out of season can be better understood when some of the erratic ways of the species are mentioned. In July, 1896, five *philenor* caterpillars changed to the chrysalis stage in a breeding cage. Three hatched in the latter part of the month. It was observed that the other two were not dead. After some time had elapsed one was opened and found to be in good condition. The box was then placed in an attic where the temperature was more nearly the same as outdoors. On May 18, 1897, a male emerged from the remaining chrysalis. Under natural conditions this butterfly would have been contemporaneous with his nephews and nieces, all of his generation that emerged from the chrysalis state during the previous summer being dead. The caterpillars feed on the Dutchman's pipe vine late in the fall, and apparently many of them die of the cold. They are accustomed to a longer season in the south.

Papilio polyxenes Fabricius. May to October inclusive.

Papilio troilus Linnaeus. May to September inclusive.

Papilio turnus Linnaeus. May to September inclusive.

Papilio thoas Linnaeus. Several were captured in August and September, 1882, and in 1893 a few were seen. Since that date it has been observed in the Moravian cemetery, where there are some bushes of *Ptelea trifoliata*, the food plant of the larva.

Family HESPERIDAE

Ancyloxypha numitor Fabricius. May to September inclusive.

Pamphila massasoit Scudder. July and August. Two from the meadows near the foot of New Dorp Lane August 8, 1885. and plentiful near Bull's Head on July 19, 1891.

Pamphila zabulon Boisduval & Leconte. May, June, August, September, and October.

Pamphila hobomok Harris. May, June, and July. On a cool and shady morning in the latter part of May, upon looking among the bushes and young trees on the edge of a field, I found four Pamphilas in the positions they had chosen in which to spend the previous night. Three of them were *P. hobomok*, and the fourth was *P. sassacus*. All were resting on the tops of the leaves, in the shade or protection of overhanging branches.

Pamphila sassacus Harris. May and June.

Pamphila metea Scudder. Collected at Tottenville in June by Captain Robert D. Wainwright.

Pamphila leonardus Edwards. One female collected at Mariners' Harbor on September 25, 1887, and one male on Todt Hill September 22, 1888.

Pamphila otho Smith & Abbot. June, July, and August.

Pamphila peckius Kirby. May to September inclusive.

Pamphila mystic Scudder. June.

Pamphila manataqua Scudder. May, June, July.

Pamphila cernes Boisduval & Leconte. May to September inclusive.

Pamphila verna Edwards. June, July, and August.

Pamphila metacomet Harris. June, July.

Pamphila ocola Edwards. This rare butterfly was taken at Annadale in September, 1896, by Captain Robert D. Wainwright.

Pamphila pontiac Edwards. July, August.

Pamphila fusca Grote & Robinson. Captain Wainwright and I collected several in a field near the Billopp house, at Tottenville, June 20, 1897.

Pamphila viator Edwards. Not uncommon at the edge of the salt meadows near Butler's pond, Dongan Hills, in July, 1898, and in July, 1900.

Pyrgus tessellata Scudder. August, September, and October at Tottenville, and one near the Morgan road, Karle's Neck, September 8, 1895.

Nisoniades brizo Boisduval & Leconte. April, May, and June, on the more barren hills and sandy districts.

Nisoniades icelus Lintner. Several specimens taken in May.

Nisoniades persius Scudder. May to September inclusive.

Nisoniades martialis Scudder. A single specimen collected on the hill west of the Clove Valley near the cave, by Mr. Oscar Fulda, May 3, 1902. One found near Reed's Valley, Todt Hill, August 10, 1909.

Nisoniades juvenalis Fabricius. Early May to October.

Pholisora catullus Fabricius. May to August inclusive.

Eudamus pylades Scudder. June, July.

Eudamus bathyllus Smith & Abbot. May, June, and July.

Eudamus lycidas Smith & Abbot. May, June, and July.

Eudamus tityrus Fabricius. May to September inclusive.

Family SPHINGIDAE

Hemaris thysbe Fabricius. I have always found the typical form in July and August, and the variety *ruficaudis* in May and June.

Amphion nessus Cramer. This insect often flies in the brightest sunshine, and may be seen occasionally about the flowers of the blackberry in June.

Sphecodina abbotii Swainson. May, June, July.

Deidamia inscriptum Harris. May, June.

Deilephila lineata Fabricius. July, August, September; also on October 23, 1900. As an illustration of the powerful flight of the Sphingidae I may mention that one day in August, several years ago, I observed several English sparrows endeavoring to capture a specimen of *D. lineata*. The moth flew in circles while the sparrows made vain efforts to head it off. This species, which usually flies in the morning and evening twilight, also flies occasionally at noonday. I have seen it in the brightest sunshine, visiting the flowers of a thistle.

Theretra tersa Linnaeus. May, June, August, September. This insect has been taken at petunia flowers, which are also attractive to other hawkmoths.

Pholus pandorus Hübner. June, July, August. A specimen has been given to me by Mr. Alanson Skinner, collected at New Brighton in the early part of November.

Pholus achemon Drury. June, July, August.

Ampelophaga choerilus Cramer. June, July, August.

Ampelophaga myron Cramer. May, June, July, August. This and its congener are often attracted by the mixture called "sugar," ordinarily prepared for noctuid moths.

Phlegethontius quinquemaculata Haworth. June, July, August, September. This, like many other Sphingidae, is quite dazed when disturbed in the daytime. I once found one on a fence and threw it into the air. It flew about in circles for a considerable time before it selected a definite direction.

Phlegethontius sexta Johanssen. June, July, August, September. The Carolina sphinx and the five-spotted sphinx visit the funnelshaped flowers of the two species of *Datura*. Many of them are killed by the electric lights, and I have found as many as ten specimens of *P. quinquemaculata* about one lamp.

Phlegethontius rustica Fabricius. A single individual captured at an electric light near Four Corners, and now in the museum of the Staten Island Association of Arts and Sciences.

Sphinx kalmiae Smith & Abbot. August.

Sphinx drupiferarum Smith & Abbot. June.

Sphinx gordius Stoll. May.

Sphinx chersis Hübner. June, July.

Sphinx eremitus Hübner.

Sphinx plebeius Fabricius. May, June, July.

Chlaenogramma jasminearum Boisduval. July.

Ceratomia amyntor Hübner. May, June.

Ceratomia undulosa Walker. May, June, July, August.

Lapara bombycoides Walker. Under an electric light at Egbertville, July 15, 1907. (O. Fulda.)

Triptogon modesta Harris. The caterpillar has been found on the island.

Smerinthus geminatus Say. August.

Paonias excaecatus Smith & Abbot. July.

Paonias myops Smith & Abbot. June.

Cressonia juglandis Smith & Abbot. June.

Family SATURNIIDAE

Philosamia cynthia Drury. June, July, August. This imported insect was first noticed on Staten Island about 1882.

Samia cecropia Linnaeus. June, July, August.

Callosamia promethea Drury. June, July, August. Several years ago fifteen cocoons of this species were collected from the same tulip tree and kept separate from all others, for the purpose of noting at what time the moths would emerge therefrom. The dates were as follows: June 9, one male; June 16, one male; June 17, one male; June 20, one female; June 23, one female; June 30, one male and one female; July 3, one female; July 7, two females; July 8, two males; July 11, three females.

Callosamia angulifera Walker. June, July, August. The cocoons are to be found on the ground under the trees on which the caterpillars have fed. The tulip tree (*Liriodendron tulipifera* L.) seems to be the favorite food plant.

Tropaea luna Linnaeus. April to September inclusive. Double-brooded and occasionally triple-brooded. I have raised

two generations of caterpillars from eggs laid by a moth collected at Kreischerville on July 11. In Proc. Nat. Sci. Assoc. Staten Island 4: 71. 13 Ap 1895, is given an account of Scarlet-margined Luna Moths. This form has been found on the island in the spring only.

Telea polyphemus Cramer. June, July, August.

Automeris io Fabricius. June, July, August.

The allied *Hemileuca maia* Drury has been found in various parts of New Jersey not far removed from the island, and no doubt is to be found here also.

Family CERATOCAMPIDAE

Anisota stigma Fabricius.

Anisota senatoria Smith & Abbot.

Anisota virginensis Drury. May, June, July.

Anisota rubicunda Fabricius. May, June, July, August. I am indebted to Mr. Louis H. Joutel for identifying several caterpillars of this genus.

Citheronia regalis Fabricius. June, July.

Basilona imperialis Drury. June, July, August.

Family SYNTOMIDAE

Scepsis fulvicollis Hübner. June, July, August, September. October 21, 1900.

Lycomorpha pholus Drury. It has been found in midsummer, but seems to be a rare species on the island.

Family ARCTIDAE

Eubaphe immaculata Reakirt. May, June.

Eubaphe aurantiaca Hübner.

Form **rubicundaria** Hübner. August.

Form **ferruginosa** Walker. June.

Form **brevicornis** Walker. June.

Utetheisa bella Linnaeus. June 27, August, September, October, November 1, 1903.

Haploa clymene Brown. Quite abundant in July and August, 1890. October 20, 1904 (C. P. Benedict).

Ecpantheria deflorata Fabricius. The larvae have been found on the island.

Estigmene acraea Drury. May, June, July, August.

Estigmene congrua Walker. May, June, August.

Hyphantria cunea Drury. April, May, June, July, August.

Hyphantria textor Harris. Usually not considered distinct from *cunea*.

Isia isabella Smith & Abbot. May, June, July, August, September.

Phragmatobia fuliginosa Linnaeus. June, July, August.

Diacrisia virginica Fabricius. June, July, August.

Diacrisia latipennis Stretch. May, June.

Apantesis virgo Linnaeus. At light, Egbertville, August 8, 1907.

Apantesis virguncula Kirby. Four Corners (Jacob Doll).

Apantesis arge Drury. April, May, July, August.

Apantesis nais Drury. May, June, July, August.

Apantesis vittata Fabricius. April, June, July, August, September.

Apantesis vittata phalerata Harris.

Ammalo tenera Hübner. June, July, August.

Ammalo eglenensis Clemens. June.

Euchaetias egle Drury. June.

Halisidota tessellaris Smith & Abbot. May, June, July.

Halisidota caryae Harris. May, June. A note in Proc. Nat. Sci. Assoc. Staten Island 1: 4. 9 F 1884, records the fact that a number of these moths, hatched under the influence of artificial heat in midwinter, emerged from the cocoons about 7 p.m. In May and June this would have been the proper hour, for they could have dried their wings by the last rays of the setting sun. In December and January it was much too late, and the moths were found to move their positions so as to receive the full rays from the lamp.

Family AGARISTIDAE

Alypia octomaculata Fabricius. June, July.

Family NOCTUIDAE

Raphia frater Grote. June.

Apatela americana Harris. June, July.

Apatela hastulifera Smith & Abbot. The larva has been found in the Clove Valley on alder, and the moth has been taken in July.

Apatela dactylina Grote. May, July.

Apatela innotata Guenée. May, July.

Apatela morula Grote. May, July, August.

Apatela interrupta Guenée. July, August, September.

Apatela lobeliae Guenée. April, May, June, July, August.

Apatela hasta Guenée. April, May, July, August.

Apatela clarescens Guenée. May, June, August, September.

Apatela hamamelis Guenée. June.

Apatela lithospila Grote.

Apatela tritona Hübner. June, July.

Apatela connecta Grote. June, July, August.

Apatela funeralis Grote. The ornate caterpillar of this species was found at New Brighton, August 6, 1905, and determined by Dr. Harrison G. Dyar.

Apatela vinnula Grote. June, July.

Apatela increta Morrison. May, June.

Apatela modica Walker. June.

Apatela ovata Grote. July.

Apatela retardata Walker. May, June, July, August.

Apatela noctivaga Grote. May.

Apatela xyliniformis Guenée. June, August.

Apatela impleta Walker. May, June.

Apatela obliterata Smith & Abbot. May, June, August.

Arsilonche albovenosa Goeze. May, August.

Harrisimemna trisignata Walker. June, August.

Microcoelia dipteroides Guenée. May, June, July, August.

- Microcoelia dipteroides obliterata* Grote.
Diphthera fallax Herrich-Schaeffer. May.
Chytonix palliatricula Guenée. July.
Baileya ophthalmica Guenée. May.
Crambodes talidiformis Guenée. August.
Platysenta videns Guenée. May, July, August, September.
Balsa malana Fitch. May, June, August.
Balsa tristrigella Walker. June.
Caradrina miranda Grote. June.
Perigea xanthioides Guenée. July, August, October.
Perigea vecors Guenée. July, August, October.
Perigea epopea Cramer. June, September, October.
Perigea sutor Guenée. July, August, September, October.
Oligia festivoides Guenée. May, June.
Oligia grata Hübner. July, October.
Hadena modica Guenée. July, August.
Hadena turbulenta Hübner. May, June, August.
Hadena miseloides Guenée. June, July, August.
Hadena semicana fractilinea Grote. August 7, 1904.
Hadena passer Guenée. May, June, August.
Hadena dubitans Walker. July, August.
Hadena impulsu Guenée. June.
Hadena devastatrix Brace. July, August.
Hadena arctica Boisduval. June, July, August.
Hadena verbascoïdes Guenée. April, July.
Hadena lignicolor Guenée. June, July.
Hyppa xylinoides Guenée. July, August.
Euplexia lucipara Linnaeus. June, July, August, September.
Dipterygia scabriuscula Linnaeus. August.
Actinotia ramosula Guenée. May, June, July, August.
Pyrrophila pyramidoides Guenée. July, August, September.
Heliotropha reniformis Grote. July, August, September.
Prodenia commelinae Smith & Abbot. August, September, October.
Prodenia ornithogalli Guenée. July, August, September, October.

Laphygma frugiperda Smith & Abbot. August, September, October.

Laphygma frugiperda obscura Riley.

Eutolyte rolandi Grote. April (O. Fulda).

Psaphidia grotei Morrison. April 15.

Rhynchagrotis brunneicollis Grote. June 21, 1902 (O. Fulda).

Rhynchagrotis anchocelioides Guenée. September, October.

Rhynchagrotis alternata Grote. August, September, October.

Adelphagrotis prasina Fabricius. July, August.

Eueretagrotis perattenta Grote. June.

Semiophora elimata Guenée. September (C. P. Benedict).

Pachnobia manifesta Morrison. May (O. Fulda).

Pachnobia fishii Grote. Collected at Silver Lake, April 29, 1902, by Ernest Shoemaker.

Agrotis badinodis Grote. September.

Agrotis violaris Grote & Robinson. October.

Agrotis ypsilon Rottensburg. July to November inclusive.

Peridroma occulta Linnaeus. August.

Peridroma margaritosa Haworth. July to November inclusive.

Peridroma incivis Guenée. August, September, October.

Noctua smithii Snellen. August, September.

Noctua normaniana Grote. August.

Noctua bicarnea Guenée. August, September.

Noctua c-nigrum Linnaeus. June, August, September.

Noctua plecta Linnaeus. May, June, July, August.

Noctua clandestina Harris. June, July, September.

Feltia subgothica Haworth. August, September.

Feltia jaculifera Guenée. August, September.

Feltia gladiaria Morrison. September.

Feltia venerabilis Walker. September.

Feltia annexa Treitschke. August, September.

Porosagrotis vetusta Walker. September, October.

Paragrotis detersa Walker. September, October.

Paragrotis bostoniensis Grote. September, October.

Paragrotis messoria Harris. September.

Paragrotis tessellata Harris. July, September.

Paragrotis redimicula Morrison. July.

Eucrotopcnemis fimbriaris Guenée. Tottenville, September 21, 1902.

Anytus privatus Walker. August, September.

Mamestra meditata Grote. August, September.

Mamestra detracta Walker. June, July.

Mamestra distincta Hübner. April, May.

Mamestra subjuncta Grote & Robinson. June, July, August, September.

Mamestra grandis Boisduval. June.

Mamestra trifolii Rottensburg. May, June, July, August, September.

Mamestra congermana Morrison. May, July.

Mamestra picta Harris. May (C. P. Benedict).

Mamestra cristifera Walker. July.

Mamestra latex Guenée. May, June, July.

Mamestra adjuncta Boisduval. May, August.

Mamestra ligitima Grote. July, August.

Mamestra renigera Stephens. May, June, August, September.

Mamestra lorea Guenée. June.

Mamestra anguina Grote. Taken at Four Corners by Mr. Jacob Doll.

Morrisonia sectilis Guenée. April.

Morrisonia confusa Hübner. May.

Nephelodes minians Guenée. September.

Heliophila unipunctata Haworth. July to November inclusive.

Heliophila pseudargyria Guenée. June to September inclusive.

Heliophila albilinea Hübner. May, June, August, September.

Heliophila multilinea Walker. June, July, August, September.

Orthodes crenulata Butler. July, August.

Orthodes cynica Guenée. May, June.

Orthodes vecors Guenée. May, June, August.

Himella intracta Morrison. April.

Graphiphora alia Guenée. May.

Tricholita signata Walker. August, September.

Xylina antennata Walker. May, September, October.

Xylina laticinerea Grote. February, March, April, October, November.

Xylina bethunei Grote & Robinson. September, October, November.

Calocampa curvimacula Morrison. April 20 (C. P. Benedict).

Cucullia convexipennis Grote & Robinson. July, August, September.

Cucullia asteroides Guenée. May, June, July, August.

Sphida obliqua Walker. June (O. Fulda).

Achatodes zeae Harris. July, August.

Gortyna velata Walker. June, July.

Gortyna nictitans Borkhausen. June, July, August.

Papaipema inquaesita Grote & Robinson. September.

Papaipema baptisiae Bird. September.

Papaipema purpurifascia Grote & Robinson. September.

Papaipema nitela Guenée. September, October.

Papaipema cerussata Grote & Robinson.

Papaipema cataphracta Grote. September.

Papaipema astuta Bird. Larva in *Collinsonia*. Identified by Mr. Henry Bird.

Papaipema duplicata Bird. Larva in *Collinsonia*. Identified by Mr. Henry Bird.

Papaipema impecuniosa Grote.

Papaipema moeseri Bird. Identified by Mr. Henry Bird.

Papaipema marginidens Guenée. September.

Pyrrhia umbra Hüfnagel. July, August, September.

Eucirroedia pampina Guenée. May, September, October, November.

Scoliopteryx libatrix Linnaeus. July, August, September.

Orthosia bicolorago Guenée. July to November, inclusive.

Orthosia helva Grote. August.

Scopelosoma moffatiana Grote. April.

Scopelosoma sidus Guenée. October.

Scopelosoma morrisoni Grote. February, April.

Scopelosoma devia Grote. May, October.

- Glaea viatica* Grote. October.
Glaea inulta Grote. September, October.
Glaea sericea Morrison. October.
Chloridea virescens Fabricius. August, September.
Heliothis armiger Hübner. August, September, October.
Rhodophora florida Guenée. July, August.
Eupanychis spinosae Guenée. Taken at Tottenville in September by Mr. Frank E. Watson.
Schinia trifascia Hübner. July, August.
Schinia nundina Drury. August (C. P. Benedict).
Schinia lynx Guenée. June.
Schinia arcifera Guenée. August, September.
Schinia thoreau Grote & Robinson. August 25 (O. Fulda).
Schinia marginata Haworth. May, July, August, September.
Schinia constricta Hy. Edwards. September 17, 1907. Apparently only a form of *S. marginata*.
Schinia brevis Grote. August, September.
Xanthopastis timais Cramer. This southern species was taken on Staten Island by Mr. Grote. (Can. Ent. 18: 95. May 1886.)
Psychomorpha epimenis Drury. April, May.
Euthisanotia unio Hübner. June, July.
Euthisanotia grata Fabricius. June, July.
Cirrhophanus triangulifer Grote. August (O. Fulda).
Plagiomimicus pityochromus Grote. August.
Plusiodonta compressipalpis Guenée. August.
Calpe canadensis Bethune. June, August.
Plusia aerea Hübner. June, August, September.
Plusia balluca Geyer. (C. P. Benedict.)
Euchalcia contexta Grote. July (C. P. Benedict).
Eosporopteryx thyatiroides Guenée. July.
Autographa biloba Stephens. June, August.
Autographa verruca Fabricius. October.
Autographa precatationis Guenée. May, June, July, September, October.
Autographa brassicae Riley. August, September, October.
Autographa basigera Walker. July, August.

- Autographa falcigera* Kirby. May to November inclusive.
Ogdoconta cinereola Guenée. June, July, August, September.
Paectes abrostoloides Guenée. June, July, August, September.
Paectes oculatrix Guenée. August.
Marasmalus inficita Walker. May, June.
Alabama argillacea Hübner. September, October.
Anomis erosa Hübner. October.
Scolecocampa liburna Geyer. The larvae have been found in decayed logs.
Rivula propinqualis Guenée. August.
Doryodes bistrariis Geyer. May, July, August, September.
Phiprosopus callitrichoides Grote. June, August.
Eustrotia malaca Grote. June 7. Determined by Prof. John B. Smith.
Eustrotia concinnimacula Guenée. May.
Eustrotia synochitis Grote & Robinson. June, July.
Eustrotia muscoscula Guenée. May, June, July, August.
Eustrotia apicosa Haworth. May, June, July, August.
Eustrotia carneola Guenée. May, June, July, August.
Galgula hepara Guenée. July.
Lithacodia bellicula Hübner. August.
Metoponia obtusa Herrich-Schaeffer. June (O. Fulda), July.
Chamyris cerintha Treitschke. June, July.
Tarache delecta Walker. June.
Tarache erastrioides Guenée. June, July, August.
Tarache candeacta Hübner. May, June, July, August.
Spragueia leo Guenée. Identified by Mr. Grote.
Metathorasa monitifera Guenée. May, July, August.
Euherrichia mollissima Guenée. June.
Phalænostola larentioides Grote. August 14. Determined by Prof. John B. Smith.
Pangrapta decoralis Hübner. May, June, August.
Hyamia sexpunctata Grote. May (O. Fulda).
Hyamia perditalis Walker. July.
Homopyralis contracta Walker. June, July, August.
Drasteria erechtea Cramer. March to September.

Drasteria crassiuscula Haworth. March to September.

Euclidia cuspidata Hübner. May, June, July, August.

Meliopota limbolaris Geyer. Two specimens taken at Sandy Brook, June 18, 1905.

Meliopota jucunda Hübner. One specimen taken at Richmond Valley, May 29, 1909.

Syneda graphica Hübner. April, May, June, July, August.

Catocala epione Drury. July, August.

Catocala vidua Smith & Abbot. September.

Catocala resecta Grote. August.

Catocala robinsonii Grote. August, September.

Catocala residua Grote. July, August.

Catocala judith Strecker. (O. Fulda.)

Catocala tristis Edwards. (J. Doll.)

Catocala cara Guenée. July, August, September.

Catocala amatrix Hübner. August, September.

Catocala amatrix nurus Walker. August.

Catocala concumbens Walker. August.

Catocala unijuga Walker. July, August, September.

Catocala briseis Edwards. July.

Catocala parta Guenée. July, August, September.

Catocala ultronia Hübner. July, August, September.

Catocala ilia Cramer. July, August, September.

Catocala innubens Guenée. July, August.

Catocala piatrix Grote. August, September.

Catocala neogama Smith & Abbot. July to October.

Catocala cerogama Guenée. August.

Catocala palaeogama Guenée. July, August.

Catocala muliercula Guenée. August, September.

Catocala antinympha Hübner. July, August.

Catocala habilis Grote. August.

Catocala grynea Cramer. July, August.

Catocala gracilis Edwards. July, August.

Catocala minuta Edwards. July, August.

Catocala amica Hübner.

Allotria elonympha Hübner. June, July, August.

Euparthenos nubilis Hübner. June, July, August.

Hypocala andremona Cramer. One specimen captured September 26, 1886, near Bull's Head.

Phoberia atomaris Hübner. April.

Panapoda rufimargo Hübner. June, July.

Parallelia bistriaris Hübner. May, June, July, August, September.

Agnomonía anilis Drury. August.

Remigia repanda Fabricius. August, September, October.

Remigia repanda marcida Guenée. August, September, October.

Poaphila quadrifilaris Hübner. June, August.

Celiptera frustulum Guenée. May, June, July, August.

Anticarsia gemmatilis Hübner. September.

Zale horrida Hübner. June, July, August.

Ypsia undularis Drury. May, June, July, August.

Ypsia undularis aeruginosa Guenée. May.

Ypsia undularis umbripennis Grote. August.

Homoptera lunata Drury. May to November inclusive.

Homoptera unilineata Grote. May.

Homoptera obliqua Guenée. June, July, August.

Erebus odora Linnaeus. July, September. Three specimens of this largest North American noctuid have been collected on the island. Two were found in buildings and one was captured at "sugar." All of these specimens are females, as indicated by the three frenula.

Epizeuxis americalis Guenée. July, August, September.

Epizeuxis aemula Hübner. June, July, August.

Epizeuxis lubricalis Geyer. June, July, August, September.

Zanclognatha laevigata Grote. July.

Zanclognatha cruralis Guenée. May, June, July, August.

Zanclognatha marcidilinea Grote. August.

Hormisa litophora Grote. July.

Philometra metonalis Walker. June.

Chytolita morbidalis Guenée. May, June, July.

Chytolita petrealis Grote. June 24. Prof. J. B. Smith gives this specific rank.

Renia salusalis Walker. July.

Renia discoloralis Guenée. July, August.

Renia sobrialis Walker. July.

Renia factiosalis Walker. August.

Bleptina caradrinalis Guenée. June, July, August, September.

Heterogramma pyramusalis Walker. May, July, August.

Gaberasa ambigualis Walker. May, August, September.

Palthis angulalis Hübner. May to September inclusive.

Bomolocha manalis Walker. June.

Bomolocha baltimoralis Guenée. April, May, June, July.

Bomolocha bijugalis Walker. (C. P. Benedict.)

Bomolocha abalinealis Walker. May, August.

Bomolocha sordidula Grote. June.

Plathypena scabra Fabricius. June to November inclusive.

Hyperna humuli Harris. July, November.

Family NOTODONTIDAE

Apatelodes torrefacta Smith & Abbot. May, June, July.

Melalopha inclusa Hübner. May, June, July.

Datana ministra Drury. June, July.

Datana angusii Grote & Robinson. June, July.

Datana drexelii Hy. Edwards. June, July.

Datana major Grote & Robinson. June, July.

Datana perspicua Grote & Robinson. July, August.

Datana integerrima Grote & Robinson. June, July.

Datana contracta Walker. June, July.

Hyperaeschra stragula Grote. (O. Fulda.)

Lophodonta ferruginea Packard. May, July, August.

Lophodonta angulosa Smith & Abbot. August.

Nadata gibbosa Smith & Abbot. May, June, July, August.

Symmerista albifrons Smith & Abbot. July.

Heterocampa umbrata Walker. June.

Heterocampa manteo Doubleday. July, August.

- Heterocampa guttivitta* Walker. June, July.
Heterocampa bilineata Packard. June (O. Fulda).
Misogada unicolor Packard. June, July.
Ianassa lignicolor Walker. June (O. Fulda).
Schizura ipomoeae Doubleday. June.
Schizura semirufescens Walker. June (C. P. Benedict).
Schizura unicornis Smith & Abbot. June, August.
Schizura badia Packard. May, June.
Schizura leptinoides Grote. One specimen taken, June 17.

1908.

- Hyparpax aurora* Smith & Abbot. June.
Cerura scitiscrupta multiscrupta Riley. June, July.
Cerura occidentalis Lintner. July, August.
Harpyia borealis Boisduval. May, June, July; August.
Harpyia cinerea Walker. June (O. Fulda), August (C. P. Benedict).
Fentonia marthesia Cramer. July.
Gluphisia septentrionalis Walker. August (C. P. Benedict).

Family THYATIRIDAE

- Pseudothyatira cymatophoroides* Guenée. July, August.
Pseudothyatira expultrix Grote. July.

Family LIPARIDAE

- Hemerocampa leucostigma* Smith & Abbot. July, August, September.

Family LASIOCAMPIDAE

- Tolype velleda* Stoll. September.
Malacosoma americana Fabricius. July.
Malacosoma disstria Hübner. June, July.

Family PLATYPTERYGIDAE

- Eudeilinea herminiata* Guenée. May, August.
Oreta rosea Walker. June, July, August.

Drepana arcuata Walker. August, September.

Falcaria bilineata Packard. July, August.

Family GEOMETRIDAE

Dyspteris abortivaria Herrich-Schaeffer. May.

Nyctobia fusifasciata Walker. April.

Rachela bruceata Hulst. November, December.

Paleacrita vernata Peck. March, April.

Alsophila pometaria Harris.

Eudule mendica Walker. May, June, July.

Eudule meridiana Slosson. June 17, 1908.

Heterophleps triguttaria Herrich-Schaeffer. June, July.

Tephroclystis miserulata Grote. July, August. Larva feeds on cultivated geranium.

Eucymatoge intestinata Guenée. August.

Euchoeca albovittata Guenée. May, June, July, August.

Euchoeca inornata Hulst. May, June.

Hydria undulata Linnaeus. May, June.

Eustroma diversilineata Hübner. July, August, September.

Rheumaptera hastata Linnaeus. June, July.

Percnoptilota fluviata Hübner. May, June, July, August, November.

Mesoleuca lacustrata Guenée. April, May, June, July, August.

Mesoleuca intermediata Guenée. March, April, May, June.

Mesoleuca vasaliata Guenée. April (C. P. Benedict).

Hydriomena multiferata Walker. May, June.

Hydriomena latirupta Walker. June, July, September.

Petrophora ferrugata Clerck. May, July, August.

Haematopsis grataria Fabricius. May, June, July, August.

Erastria amaturaria Walker. July, August.

Deptalia insularia Guenée. July, August, September.

Cosymbia lumenaria Hübner. April, May, June, July.

Synelys alabastaria Hübner. June, July.

Synelys ennucleata Guenée. July, August.

Eois inductata Guenée. June, August.

Chlorochlamys chloroleucaria Guenée. May, June, July, August.

Nemoria subcroceata Walker. June, July.

Synchlora aerata Fabricius. July, August.

Synchlora rubrifrontaria Packard. July.

Aplodes mimosaria Guenée. May, June.

Anaplodes remotaria Walker. May, June, July.

Orthofidonia vestaliata Guenée. July, August.

Heliomata cycladata Grote. June.

Psysostegania pustularia Guenée. May, June, July, August.

Gueneria basiaria Walker. June.

Deilinea liberaria Walker. September.

Sciagraphia heliothidata Guenée. May, July, August.

Philobia enotata Guenée. May, June, August.

Macaria aequiferaria Walker. May.

Cymatophora wauaria Linnaeus. June.

Apaecasia deterrenta Guenée. May, June.

Apaecasia defluata Walker. June.

Alcis atrolinaria Hulst. April.

Paraphia subatomaria Wood. June, August.

Paraphia subatomaria deplanaria Guenée. August.

Selidosema umbrosarium Hübner. May, June.

Cleora pampinaria Guenée. April, May, July, August.

Cleora larvaria Guenée. August.

Melanolophia canadaria Guenée. April, May, July, August.

Aethaloptera intextata Walker. April, June.

Ectropis crepuscularia Denis & Schifferrmüller. April, May, June, July, August. Most abundant in April, May, and June.

Epimecis virginaria Cramer. May, June, July, August.

Lycia cognataria Guenée. May, June, July, August.

Nacophora quernaria Smith & Abbot. May, June, July.

Phigalia olivacearia Morrison. March.

Phigalia titea Cramer. March, April.

Erannis tiliaria Harris. October, November.

Cingilia catenaria Drury. September, October.

Anagoga pulveraria Linnaeus. May.

- Therina endropiaria* Grote & Robinson. May, June.
Therina fervidaria Hübner. September, October.
Metrocampa praegrandaria Guenée. June, August.
Eugonobapta nivosaria Guenée. May, June.
Ennomos subsignarius Hübner. July, August.
Ennomos magnarius Guenée. September, October, November.
Xanthotype crocataria Fabricius. May, June, July, August.
Plagodis serinaria Herrich-Schaeffer. June.
Plagodis fervidaria Herrich-Schaeffer. July, August.
Plagodis alcoolaria Guenée. May.
Hyperitis amicaria Herrich-Schaeffer. May, June.
Ania limbata Haworth. June, July.
Gonodontis hypochraria Herrich-Schaeffer. May, June, July.
Gonodontis duaria Guenée. May, June.
Gonodontis obfirmaria Hübner. May.
Euchlaena serrata Drury. June.
Euchlaena obtusaria Hübner. June.
Euchlaena johnsonaria Fitch. (C. P. Benedict.)
Euchlaena amoenaria Guenée. June.
Metanema inatomaria Guenée. May (O. Fulda).
Metanema textrinaria Grote & Robinson. May.
Priocycla armantaria Herrich-Schaeffer. June.
Priocycla decoloraria Hulst. (C. L. Pollard.)
Pero honestarius Walker. May, June, August.
Pero marmoratus Grossbeck. July, August.
Syssaura infensata Guenée. July, September.
Caberodes confusaria Hübner. June, July, September.
Caberodes majoraria Guenée. June.
Tetracis crocallata Guenée. May, June, July, August.
Sabulodes arcasaria Walker. May, July, August. *S. sulphurata* Packard is the female of this species.
Sabulodes lorata Grote. May, June.
Sabulodes transversata Drury. July, August, September.
Abbotana clemataria Smith & Abbot. May, June, July.
Brephos infans Möschler. March, April.

Family NOLIDAE

Celama triquetra Fitch. May, June, August.

Nola ovilla Grote. April, August.

Roeselia minuscula Zeller. June.

Family LACOSOMIDAE

Lacosoma chiridota Grote. (O. Fulda.)

Family PSYCHIDAE

Thyridopteryx ephemeraeformis Haworth. September.

Eurycyttarus confederata Grote & Robinson. June.

Family COCHLIDIIDAE

Sibine stimulea Clemens. June, July.

Euclea delphinii querceti Herrich-Schaeffer. June, July.

Euclea indeterminata Boisduval. June.

Euclea chloris Herrich-Schaeffer. July.

Adoneta spinuloides Herrich-Schaeffer. July.

Sisyrosea textula Herrich-Schaeffer. The caterpillar has been collected on the island.

Phobetron pithecium Smith & Abbot. June.

Isochaetes beutenmülleri Hy. Edwards. The caterpillars were found by Mr. Louis H. Joutel on a swamp oak near Richmond, August 30, 1901, and later I reared therefrom several of the mature insects, which emerged the following year.

Prolimacodes scapha Harris. July.

Cochlidion biguttata Packard. June.

Cochlidion y-inversa Packard. (O. Fulda.)

Lithacodes fasciola Herrich-Schaeffer. June, July.

Tortricidia testacea Packard. May, June.

Tortricidea pallida Herrich-Schaeffer. The larva has been found on the island.

Family MEGALOPYGIDAE

Lagoa crispata Packard. June, July.

Family PYROMORPHIDAE

Pyromorpha dimidiata Herrich-Schaeffer. June.

Harrisina americana Guérin-Méneville. June, July, August.

Family THYRIDAE

Thyris lugubris Boisduval. June, July.

Family COSSIDAE

Zeuzera pyrina Linnaeus. June, July. The first specimen of the imported and destructive leopard moth was found under a partly decayed white maple on Fort Hill, June 23, 1888. See Proc. Nat. Sci. Assoc. Staten Island 3: 35. 18 Mr 1893.

Prionoxystus robiniae Peck. June, July.

Prionoxystus querciperda Fitch. Collected at Four Corners by Jacob Doll and George Franck.

Family SESIIDAE

Melittia satyriniformis Hübner. June, July, August, September.

Memythrus simulans Grote. Larvae in swamp oak (George P. Engelhardt).

Memythrus asilipennis Boisduval. May 24 (George P. Engelhardt).

Bembecia marginata Harris. September.

Sanninoidea exitiosa Say. June, July, August.

Sesia bassiformis Walker. August.

Sesia tipuliformis Clerck. June.

Sesia pictipes Grote & Robinson. June, July.

Sesia acerni Clemens. May, June, July.

Sesia corni Hy. Edwards. June.

Sesia pyri Harris. July.

Sesia pyralidiformis Walker. August.

Notes on Specimens Recently Collected in the Serpentine Area of Staten Island¹

ARTHUR HOLLICK

The so-called serpentine or soapstone area of Staten Island, represented most prominently by the range of hills extending from the shore at New Brighton to the Fresh Kills marshes, near the center of the island at Richmond, has been so frequently discussed at our meetings that brief reference only is necessary to some of the features with which these notes are concerned.

The eastern and southern borders of the area are well defined by steep slopes, which in places are almost perpendicular escarpments of bare rock, such as may be seen on the eastern side of Pavilion Hill at Tompkinsville and on the eastern side of Grymes Hill at Stapleton. For the most part, however, the outcrops are hidden and their outlines modified either by talus accumulations or by glacial drift. Only a limited portion of the area, in the southern flanks of Todt Hill, lies south of the terminal moraine. Toward the north and west the surface is an irregular slope to tide water and the exact limits of the boundary between can only be inferred. The rock is covered with glacial and recent surface deposits, except in certain stream beds, such as in the Clove Valley below Martling's Pond. Logan's Spring brook in the Sailor's Snug Harbor grounds, etc. Elsewhere, however, it has been exposed in sewer, street, and other excavations, and its presence near by, in other places, is indicated by fragmentary surface material. On theoretical grounds the northwest boundary is assumed to be approximately parallel with and close to the eastern edge of the trap ridge, which extends from Port Richmond to Linoleumville.

The object of these notes is to describe certain rock specimens

¹ Presented. October 16, 1909.

and minerals recently collected, and to discuss their characters and the conditions under which they were found. I am indebted to Dr. Charles P. Berkey, of Columbia University, for the preparation of their sections for microscopic examination, and to Dr. Alexis A. Julien, of the same institution, for their critical examination and the determination of their specific characters.

The rock is traversed by a system of jointing which simulates more or less closely the features of dip and strike in sedimentary rocks. In fact deductions based upon these features alone would justify the opinion expressed by earlier investigators that the rock might represent a metamorphosed series of sediments. This jointing is best seen in the vicinity of Richmond, near the Latourette farm, and may be observed in many of the boulders scattered over the morainal region to the south, some of which, when broken and reduced to hand specimens, might well be mistaken for shale or schist.

Over the unglaciated area on Todt Hill and on the tops of the hills at New Brighton and Tompkinsville, where glacial erosion was limited, the rock is weathered into a soft, yellowish, fractured condition, to which the name "soapstone" is generally applied. In the vicinity of Richmond, where glaciation was more pronounced, the upper, weathered zone was eroded and the rock now exposed at the surface is hard and dense in texture and dark green in color.

One of the finest series of rock specimens and characteristic minerals thus far obtained from the Staten Island serpentine area was recently collected during the progress of excavating the trench for the retaining wall along the east side of Jay Street at St. George. A projecting spur of the serpentine escarpment was cut away for a distance of some seventy-five feet, almost down to tide level, exposing a vertical face twenty feet in height and affording a view of the rock at a lower level than had been previously visible anywhere on the island. The serpentine rock was very dark green in color, hard, and much seamed and fractured, the fractures often filled with talc, marmolite, magnesite, calcite,

and aragonite. Associated with the serpentine and apparently indicating the location of a fault line or shear zone, was a vertical series of very hard amphibolite or antholite schists, identical with the rock struck at a depth of 200 feet in a well boring at Bischoff's brewery, Stapleton, also on the eastern edge of the escarpment. What is apparently a continuation of this series may also be seen outcropping on the surface along the eastern side of Pavilion Hill, where in one place it is an almost black hornblende rock. Another shear plane was occupied by a band of chlorite schist and talc, which attracted considerable attention on account of its conspicuous coloring and also because it caused the contractor more or less trouble by slipping.

The great variation in the color and texture of the rock from place to place throughout the area might seem to preclude the probability that it was all derived from one source; but the field observations, taken in conjunction with the determination of the mineral constituents by microscopic examination, indicate conclusively that it all had a common origin and that this was a basic igneous rock.

The fact that the most extensive fracturing and shearing of the rock, accompanied by the greatest variety in the rock and its associated minerals, occurs along the face of the steep eastern escarpment is significant. It evidently represents a zone of disturbance and at once suggests a fault as the cause of the escarpment, and the accompanying shearing and slipping as the controlling factor in the evolution of most of the minerals that are found along the shear planes. All the phases of the antholite schist may be seen, sometimes in a single hand specimen, from the hard massive or crystalline form to that which is flattened or foliated or lengthened out into fibrous asbestos. Heretofore we have always called this latter mineral "fibrous serpentine," a name that must now be abandoned.

Notes on the White-breasted Nuthatch¹

WILLIAM T. DAVIS

Last summer Mr. Isaac Wort, of Woodrow, Staten Island, showed Mr. Howard H. Cleaves and me a small sour gum having a hole in the trunk about 30 ft. from the ground, where a pair of white-breasted nuthatches, *Sitta carolinensis* Lath., had their nest earlier in the season. This is the first record of the bird breeding on our island.

We have seen a white-breasted nuthatch in the Clove Valley on the tenth of August, but most of the records are from September 1 to the end of March. We have found the bird in the wooded portions of Bronx Park, N. Y. City, on June 19, and it is commonly considered a permanent resident in this vicinity.

Alexander Wilson says that the nuthatches have received the name from their "supposed practice of breaking nuts by repeated hatchings, or hammerings with their bills," but he adds that he has never seen them so engaged, and concludes that if they do open soft-shelled nuts, they are after the larvae that so often breed therein. However, that they are fond of the kernels of nuts has been attested many times since the days of Wilson.

On a cold day late in November several years ago, I noticed a white-breasted nuthatch picking at a nut that it had laid on a large fungus growth up in a tree, using the fungus as a table. I stopped to watch it, and the nuthatch also stopped to look at me. After going on with its work, it again regarded me for a short time, then went into a hole, and presently reappeared with a nut. This it placed beside the other one. It would pick at these nuts, or would run up the tree a little way, and then back as if for exercise, but always returning to the nuts. I had watched it for a long time, when coming around to the hole again,

¹ Presented October 16, 1909.

the bird regarded me very attentively, being evidently afraid to go in while I was so close. After several starts, it finally disappeared and in due time brought out another nut. Later I examined these hickory nuts and found that they had been opened by a squirrel, one of them still having some of the kernel left in it, showing the marks of the nuthatch's bill.

Every rambler afield in winter time has come across little flocks of birds of several species, assembled for apparently no other purpose than pure sociability. They cannot talk one another's language, perhaps, but they nevertheless keep company and enjoy the association.

I remember three brown-creepers and a single white-breasted nuthatch that were thus keeping company. As long as the creepers were near, the nuthatch was busy running up and down the tree trunks, but when they flew away it called very often as if it wished for their return. This note is a *yank-yank*, or as Wilson says a *quank, quank*. Thoreau writes "I hear a fine busy twitter, and looking up, see a nuthatch hopping along and about a swamp white oak branch inspecting every side of it, as readily hanging head downwards as standing upright, and then it utters a distinct *quah* as if to attract a companion. Indeed, that other finer twitter seemed designed to keep some companion in tow, or else it was like a very busy man talking to himself. The companion was a single chickadee, which lisped six or eight feet off." Thoreau also heard the song of the white-breasted nuthatch, which he likened to "*To-what what what what*, rapidly repeated, and not the usual *quah quah*."

I have also heard the nuthatch singing on the island in the latter days of March, but at the time likened it to its usual note repeated very rapidly.

The allied red-breasted nuthatch has been seen on the island on several occasions, and on the eighteenth of February, several years ago, I came at sunset to an old dogwood in which I noticed a hole. I got up the tree a little way, when a red-breasted nuthatch stuck its head out, but quickly retreated. Shortly it

came out again and flew to a tree near by and went to picking at the bark. Though I had disturbed it in its slumbers, yet it was not much frightened, and went quietly to work picking the bark as if it had left its retreat calmly without first having had two fingers thrust in the little doorway to keep it from flying out.

The Disputed Claim of the Proprietors of East Jersey to Staten Island

EDWARD C. DELAVAN, JR.

There is no better way of interpreting ancient words, or of construing ancient grants, deeds and charters, than by usage; and the uniform course of modern authorities fully establishes the rule, that, however general the words of an ancient grant may be, it is to be construed by evidence of the manner in which the thing granted has always been possessed and used; for so the parties thereto must be supposed to have intended. *Contemporanea Expositio est optima et fortissima in Lege.*¹

The grant by Charles II to his brother James, Duke of York and Albany, on March 12, 1664, of a vast tract in the New World was followed in the following year by the conveyance by the latter to John, Lord Berkeley, and Sir George Carteret, of the territory later known as New Jersey, and described as

"all that tract of land adjacent to New England and lying and being to the westward of Long Island and Manhitas Island, and bounded on the east, part by the main sea and part by Hudson's river, and having upon the west Delaware bay or river, and extending southward to the main ocean as far as Cape May at the mouth of Delaware bay and to the northward as far as the northernmost branch of the said bay or river of Delaware which is in forty-one degrees and forty minutes of latitude and crossing over thence in a straight line to Hudson's river in forty-one degrees of latitude."²

The complicated history of the New Jersey grants has been so clearly treated in the third volume of the *Narrative and Critical History of America*, at pages 421 *et sequitur*, that it will be necessary to refer to them only incidentally here.

¹ Brooms Legal Maxims, 8th Am. ed., 682. 4 American and English Encyclopedia of Law, 2d ed., 796.

² 1 New Jersey Archives, first series, 8, 10.

Had the descriptions of these grants stopped with the words "to the westward of Long Island and Manhitas Island" Staten Island would seem clearly to have been included, but the addition thereto of the words "and bounded on the east, part by the main sea and part by Hudson's river," introduced a latent ambiguity. What was Hudson's river?

Capt. Philip Carteret came over as the first governor of East New Jersey and took possession of that territory. It does not appear that he then attempted to take possession of Staten Island.

Governor Nicolls had made several grants of land in New Jersey after the grant to Berkeley and Carteret, but before he had notice that it had been made; these grants were promptly repudiated by the Duke of York.³ But Governor Nicolls during the same period had made grants of land on Staten Island; these were not repudiated by the Duke of York; on the contrary, some of them were later confirmed. The Duke and his successors thereafter remained in uninterrupted possession of Staten Island and resisted all adverse claims thereto. The matter became the subject of official correspondence, which will be briefly recited.

The first dispute over the title to Staten Island seems to have arisen when Governor Carteret of New Jersey attempted to cut hay thereon, a proceeding which led Governor Lovelace of New York to address to him a letter of the following tenor:—

"S^r

"I received yo^r Lett^r by y^e hands of Mr. Jones; y^e Contents were a narrative of what had past between one of yo^r Magistrates & my Marshall; I must confess I have heard something of that Story though imperfectly; neither did I give too much Credit to his Relation, finding him to bee too much transported, w^{ch} I can attribute to noe other reason, then what he averrs, his hard Treatm^t; Tis true, I employed him to forewarne all persons (that had not that common Civility to them to desire Liberty of mee) to cutt & carry away Hay from *Staten Island* without my Appro-

³ I N. J. Arch., 1st series, 17, 46, 97.

baçon; but it seems Mr. *Hopkins* (whether in contempt or Derision) promis'd to make an Essay, whither the Propriety belonged to his Royall Highness, or y^e Lord Proprietors, & as my Servant averrs, when that was y^e Dispute, he was soe confident as to decide it their's (for that was the Terme) And upon that Conclusion perhaps us'd him more rigourously than some undecent Reply of my Servant might meritt. S^r I hope there will not bee an Occasion of a Controversy of the Title of that Place after 5 years possession, together with a lawfull Purchase of the Natives, & not the least Contradiction from y^e Lord Proprietors; but if any pragmatick Person, out of any Officiousness or sinister Ends of his own shall intermeddle in that Affayre, I shall assure him to maintain my Royall Masters Interest to that place, to the utmost of my Ability; Mr. *Jones* brought another Letter, but finding the Superscription to be Mr. *Hopkins* his Hand, with whom I never had any Correspondence (neither desire I any) I refused the Acceptaçon. I have noe more at present, but that I am

Yo^r humble Servant

N. Y. 18 Sep: 1672

FR. LOVELACE" ⁴

Sir John Werden, the secretary of the Duke of York, later wrote as follows to Governor Andros:

1675. Feby 13. ". . . P.S. I had allmost forgott to tell you y^t we have as yet done nothing towards y^e adjusting Sir George Carteretts pretensions in New Jersey, where I presume you will take care to keep all things in y^e same posture (as to y^e Dukes prerogatives & proffitts) as they were in your predecessors time untill you shall hear of some alteracôns agreed to here."⁵

Again Sir John Werden wrote to Governor Andros:

1681, May 12. ". . . As for y^e Islands in Delaware river, it is best to observe well the grants, as I take Mr. Pen's is bounded by the shores of Delaware river, on y^e East, by which Islands

⁴ 13 Col. Doc., 466. (Documents relating to the Colonial History of the State of New York.)

⁵ 3 Col. Doc., 229. See 13 Col. Doc., 508.

seeme excluded out of his patent, if they lye out in y^e open river, and may still belong to New Castle, and soe alsoe for those y^t the Quakers of New Jersey may pretend to; but in both these cases the graunts alone must determine y^e matter, w^{ch} you may be well advised upon, for here they are not, neither can we judge soe well as our lawyers. . . .”⁶

LETTER FROM GOVERNOR CARTERET AND COUNCIL TO THE GOVERNOR OF NEW YORK AND HIS COUNCIL, REFERRING TO THE OWNERSHIP OF STATEN ISLAND

(From “East Jersey Records,” Vol. II, Liber 3, p. 171.)

By the Hon^{ble} Phillip Carteret Esq^r. Governor of the Province of East New Jersey under the Right Hon^{ble}, the Lady Elizabeth Carteret Sole Executrix to the Right Hon^{ble}, Sir George Carteret Kn^t. & Bar^t. Deceased Late Lord Proprietor of this Province and his Councill

To the Hon^{ble}, the Governor or Commander in Chief of all his R: Highness Territories in America at New York and his Councill there.

WHEREAS I have an order to Lay Claime to Staten Island as properly and Justly belonging to the Lord Proprietor his Government and Jurisdiction of this Province and doth Apppeare by his R: Highness Grant under his hand and Seale bearing date the 10th day of 7temb. 1680. WHEREFORE these are in the Lord Proprietors Name and by Virtue of the said Grant to demand of you the Surrender of the s^d Island unto me with the Quiet possession thereof, and that your Selfues or any other persone by your Authority doe forbear the Expressing eny Command Authority or Jurisdiction within the said Island in which I doe Expect your Speedy answer & Compliance—

Given under my hand and Seale the 22^d July 1681.

⁶ 3 Col. Doc., 286.

PROCLAMATION OF GOVERNOR CARTERET TO THE INHABITANTS OF
STATEN ISLAND

(From "East Jersey Records," Vol. II, Liber 3, p. 171-2.)

By the Hon^{ble} Phillip Carteret Esq^r Governor of the Province of East New Jersey under the Right Hon^{ble}s The Lady Elizabeth Carteret Sole Executrix to the Right Hon^{ble}, Sir George Carteret Kn^t. & Bar^t. Deceased Late Lord Proprietor of this Province.

WHEREAS Staten Island doth of right belong to the Province of East New Jersey as doth appeare of his R. Highness the Duke of York Deed of Grant under his hand & Seale bearing date the 10th of 7temb. 1680. but hath been detained by several of the Governors under his R. Highness, Contrary to all Law & Equity and having now a Speciall order from the Lord Proprietor to demand the same These are in his Majesty's Name to will and require you the Magistrates Officers and Inhabitants of the said Island to forbear Yielding any Obedience to the Government or Jurisdiction of New York, or to doe or Act anything by their Authority or Command and receive your Commissions Orders and Instructions from me your Lawfull Governor as you will answer the Contrary at your P'rills.

Given under my hand and Seale the 22 July An^o. Dom'. 1681.

PH. CARTERET.

(Seal)

CAPTAIN ANTHONY BROCKHOLLS, OF NEW YORK, TO GOVERNOR
CARTERET

(From "Grants and Concessions," p. 686.)

New York, July, 26th, 1681.

Capt. CARTERET.

I This Day received several Papers from you by Mr. BULLEN, and LAPRERY, which have been shewn and read in Council, but find no Power thereby for you to Act in, or assume the Government of NEW-JERSEY, and till you pursuant to our former Orders and Resolves in Council, and your Parole to me, produce and

shew a sufficient Authority you are and I do hereby require you to desist Acting in any publick Capacity, and remain,

Your Friend and Servant,

ANTHONY BROCKHOLLS.⁷

GOVERNOR CARTERET TO CAPTAIN BROCKHOLLS

(From "Grants and Concessions," p. 687.)

Elizabeth-Town 28th July, 1681

Capt. BROCKHOLLS,

Sir, I have received yours of the 26th Instant, by Mr. BULLEN, and Mr. LAPRERY. I have a Power sufficient to Act as Governor of EAST NEW-JERSEY, and am no more bound to give you and your Council an Account thereof, then you are obliged to give me an Account of yours: When you do produce to me by what legal Authority you are so confident to controul my Proceedings, I will shew you mine to contradict it. In the mean Time I will send your uncivil Answer for ENGLAND, where your late Governor and his Councils unjust Proceedings, are already disowned by your Master, and condemned to be illegal by all in General. I did send you a Copy of his Royal Highness Grant attested by the Secretary of this Province, of which you seem to take no Notice of, nor of my demand of the Surrender of Staten-Island, unto me, by which I conclude a denial, I remain

Your Friend and Servant,

PH. CARTERET.

GOVERNOR CARTERET TO LADY ELIZABETH CARTERET

(From "Grants and Concessions," p. 687.)

Madam,

YOUR HONOUR will see by the inclosed Letter of Capt. BROCKHOLLS, Commander in Chief of NEW-YORK Government, under

⁷ Anthony Brockholls was left by Governor Andros in charge of the Government of New York, on leaving for England, in January 1681. Ed.

his Royal Highness, the Answer to mine and the Councils demand of STATEN-ISLAND, which is as much your Honour's due as any other Part of this Province, with my reply unto it, by which your Honour will understand the continuance of their Obstinacy and unjust Proceedings, which if not taken off by his Royal Highness and punished in Sir EDMUND ANDROSS, now you have him in ENGLAND, we shall never be at quiet. The last Week the Council and General Deputies of the Assembly did meet for the Settlement of the Country, at which Time they all unanimously voted and concluded, that Sir EDMUND ANDROSS, and Abettors Proceedings against this Government was illegal; some other small Things was done, which your Honour shall have account in due Time; and so adjourned to the Month of OCTOBER next. The Ship is just a going to set Sail, and have not Time to add more, than that

I am Madam

Your most humble and faithful Servant

PH. CARTERET.^s

(July 30th, 1681.)

A LETTER FROM CAPT. BROCKHOLLS TO S^r JOHN WERDEN ON
THE CLAIM TO NEW JERSEY

New Yorke July the 30th 1681.

Hon^{ble} S^r.

Since mine of the 25th the Inclosed Demand of *Staten Island* hath Come to my hands with a Coppy of the Dukes Grant but the Original not having been shewn here and Recorded as I Judge they ought and hath been formerly Practiced Doe take Little notice thereof nor give any Peticuler answer to the Demand the within Mençoned Capt. *Phillip Carterett* not haveing Produced and Shewne any Sufficient power to make the Same or act as Governo^r. But have in answer thereto Commanded him to Desist Acting in and Assumeing the Government Till Such Authority

^s 1 New Jersey Archives, 1st series, 349. 13 Col. Doc., 551.

Shall be Produced and Shewne and am Resolved not to parte with *Staten Island* without Perticuler Direcçons therein from his Roy^{ll} Highnesse, It being soe Materially Necessary for this Governm^t and never in their Possession who I thinke Incroach much on his Roy^{ll} High^s Kindnesse to Clayme the Same I thought ffit to Advise you there of that Suitable Ord^s may be Given accordingly and am

Hono^{ble} S^r

Your Affectionate ffriend and humble Servant

A. B.

In the following year Acting-Governor Brockholst of New York gave to Governor Carteret of New Jersey permission to cut meadow hay on Staten Island until further notice.⁹

We now find the following letter from Sir John Werden to Governor Dongan:

1684, Nov. 1. "... Staten Island wthout doubt belongs to y^e Duke for if Sir George Carterett had had right to it, that would have beene long since determined, and those who broach such fancyes as may disturbe the quiett of possessions in y^t Island are certainly very injurious to y^e Duke, and we think have no colour for such pretences. . . ." ¹⁰

Governor Dongan accordingly wrote to the Earl of Perth, who had acquired an interest as one of the proprietors of East Jersey a letter from which the following is an extract:

1685, Feby 13. "... Your agents have dispersed printed papers to y^e disturbance of y^e inhabitants of Staten Island, It hath been in possⁿion of his R^{ll} High^{ss} above twenty years (except y^e little time y^e Dutch had it) purchased be Governor Lovlace from y^e Indiyans in y^e time of S^r George Carteret, without any pre^tences 'till y^r agents made claime to it, it is peopled with above two Hundred ffamilies. . . ." ¹¹

⁹ 13 Col. Doc., 563.

¹⁰ 3 Col. Doc., 352.

¹¹ 3 Col. Doc., 354.

At about the same time Governor Dongan wrote to Sir John Werden as follows:

1685, Feby. 18. "... I think it would doe well if you please to look into the last patent of East Jersey to see whether shipping bee obliged if they come into Sandy Hook to make entry at New York, the Quakers making continual pretences to Staten Island disturbs the people, more than 200 families are settled on it. And in case His Royal Highness cannot retrieve East Jersey, it will doe well to secure Hudson's River and take away all claim to Staten Island. . . ." ¹²

In 1704, Peter Sonmans and William Dockwra, who had acquired interests as proprietors of East Jersey, petitioned Queen Anne for the surrender of Staten Island to them and their associates, which petition was referred to a committee and seems since to have rested peacefully in some obscure pigeon hole or pipe roll in the office which was once of the Lords Commissioners of Trade and Plantations.

TO THE QUEENS MOST EXCELLENT MAJESTY

The Petition of Peter Sonmans and William Dockwra for themselves and the rest of y^e. Proprietors of the Eastern Division of the Province of Nova Caesarea or New Jersey in America.
Sheweth

That his late Ma^{ty}. King Charles the Second by his Letters Patent bearing date the 29th, of June in the 26th Year of His Reign, for the Considerations therein mentioned did Grant and Confirm unto James Earl of Perth, Sr. George Meckenz, Rob^t. Berkley Argent (Arent) Sonmans, W^m. Dockwra and others their Heirs and assigns for ever that part of the aforesaid Lands which then was and ever since till very lately has been called by the named of East Jersey Extending Eastward and Northward all along the Sea Coast, and Hudsons River from little Egg Harbour

¹² 3 Col. Doc., 356.

to that part of Hudsons River which is in 41 Degrees of North Latitude and otherways bounded and limited as in the said Grant and Confirmation as expressed with all Islands, Bays, Rivers &c^a. to the same belonging or in anywise appertaining within which said boundary lyes an Island called Staten Island.

That Your Ma^{ty}s. Governor of New Yorke pretends in right and for the use of Your Ma^{ty}. to Claime the said Island and keeps Possession thereof, and tho. Your Pet^{rs}. by Councell Learned in the Law are advised they have an undoubted Right to the said Island, yet out of their great duty and Deference to your Ma^{ty}. doe restrain themselves from taking any other method for Recovery thereof than by humble Representation of their Case for your Ma^{ty}s. most Gracious Pleasure and Direction therein, to which your Pet^{rs}. shall most Readily and Intirely Submitt.

Your Pet^{rs}. therefore most humbly pray That Your Ma^{ty}. will be Graciously pleased to give such Orders and Directions for the hearing and finall determining of this matter as your Ma^{ty}. in your great Justice and wisdome shall think fitt.

And Yo^r. Pet^{rs}. (as in duty bound) shall ever pray &c^a.

PETER SONMANS
WM: DOCKWRA

AN ORDER OF COUNCIL, REFERRING TO THE LORDS OF TRADE A
PETITION FROM PETER SONMANS AND WM. DOCKWRA,
ABOUT THE TITLE TO STATEN ISLAND

(From P. R. P. B. T. New Jersey, Vol. I A, 18.)

An Order of Council of the 6th. Inst. referring to this Board y^e.
Petition of Peter Sonmans & W^m. Dockwra &c relating to their
Title to the Island of Staten in New Jersey &c Recd July 10th.
1704.

At the Court at St. James's the 6th. day of July 1704.

L. S.

Present.

THE QUEENS MOST EXCELLENT MA^{ty}. IN COUNCILL.

Upon reading this day at the Board the Petition of Peter Sonmans and William Dockwra for themselves and the rest of the Proprietors of the Eastern Division of the Province of Nova Caesaria or New Jersey in America, relating to the Island of Staten, which the Governor of New Yorke pretends to, in Right and for the use of Her Ma^{ty}. and keeps Possession thereof, and praying that Directions be given for the hearing and finally Determining of that matter. It is ordered by Her Ma^{ty}. in Councill That it be, as it is hereby Referred to the Lords Comm^{rs}. of Trade and Plantations to Examine the matter of the said Petition, a Copy whereof is hereunto annexed, and upon hearing the Pet^{rs}. and others concerned, to Report to this Board, what they conceive fitt for Her Ma^{ty}. to do thereupon.

JOHN POVEY.¹³

That the circumnavigation of Staten Island by Christopher Billop or any one else had any bearing upon the settlement of this disputed title is highly improbable. It presented questions to be settled by courts rather than by sailing craft; and it seems odd, that dispute having arisen, the Duke of York should have been willing to surrender a large Island, but desirous of retaining a small one, as the result of a twenty-four hour sailing test.

The first grant of land on Staten Island to Billop bears date 25 March, 1676, and was confirmed by patent dated 6 May, 1687. The first was a mere grant of land. The second created the Manor of Bentley. Christopher Billop was in July, 1674, commissioned by Governor Andros, second lieutenant of a company of foot; (3 Col. Doc. 221); in August, 1676, he desired to give up his commission (id. 239); from August 14th, 1677 to 10 March 1679 he was commander and subcollector at Delaware Bay; on the latter date he was dismissed in disgrace. (12 Col. Doc. 580.

¹³ 3 N. J. Arch., 1st ser., 61.

581, 584, 593, 594, 595, 599, 607, 613, 3 Col. Doc. 276.) He was still angry with Governor Andros in 1680 (3 Col. Doc. 284), and in 1684 desired to sell his plantation (id. 350) on Staten Island, opposite Perth Amboy (id. 356). In December, 1685, after James had ascended the throne, Billop appealed to the King from a judgment of the Mayors Court of the City of New York (id. 365, 366.) The Manor of Bentley was created, as we have seen, in 1687.

NOTE.—Since the foregoing article was written the attention of the writer has been called to a book entitled *A History of Thomas and Anne Billopp Farmar, and Some of Their Descendants in America*, by Charles Farmar Billopp, a copy of which may be found in the New York Public Library.

Records of Meetings

REGULAR MEETING, OCTOBER 16, 1909

The meeting was held in the museum, Borough Hall, New Brighton
First Vice-President William T. Davis in the chair.

About thirty persons were present.

The minutes of the annual meeting of May 15, 1909, were read and approved.

Dr. Arthur Hollick presented the following

REPORT OF THE COMMITTEE

ON THE

ANNUAL PRIZE COMPETITION IN NATURAL SCIENCE

OPEN ONLY TO

PUPILS IN CURTIS HIGH SCHOOL

The subject of competition for the school year 1908-1909 was "a collection of the leaves and flowers or fruit of not less than twenty-five native and introduced Staten Island trees, with a written discussion of their respective availabilities for shade, ornamental or memorial purposes."

Two collections were submitted in competition, but only one of them fulfilled all the requirements of the conditions imposed. This one, submitted by Carl Philip Dowell, contained sixty mounted specimens, and seventeen specimens of fruits in boxes, collectively representing forty species, all of them correctly named.

The accompanying written discussion also complied with the conditions imposed.

The prize was, therefore, awarded to Carl Philip Dowell.

The other collection, submitted by Thomas Nicholson, was commended for the care and neatness shown in the preparation of the specimens.

The committee recommends that the prize specimens be displayed in the museum of the Association, and that the written discussion be printed where it may receive the attention which it deserves and be made available for suitable distribution.

The subject and conditions determined upon for the school year 1909-1910 are:

Subject

A collection of not less than fifty Staten Island insects of economic importance, including not less than twenty-five species. (By "insects of economic importance" is meant such as are injurious or beneficial to cultivated plants or to man.)

Conditions

1. The specimens shall be neatly mounted and placed in boxes or cases.
2. Each specimen shall be labeled with the scientific name, the common name if any, the date of collection, and the locality where collected.
3. Accompanying the collection shall be a brief statement of the special economic interest attaching to each specimen.
4. The collection shall be made between July 1, 1909, and June 1, 1910, and shall be turned over to the principal of Curtis High School, complete in all details, on or before June 15, 1910.

HARRY F. TOWLE,
CHARLES L. POLLARD,
ARTHUR HOLLICK,

Committee.

Mr. Samuel McK. Smith, for the committee on concerts and lectures, announced the following tentative program for the season of 1909:

Friday, November 5—The Olive Mead Quartette.

Monday, November 22—Readings by Mrs. Bertha Kunz Baker.

Friday, December 10—Concert by Mr. and Mrs. David Mannes.

The secretary announced the deaths, since the annual meeting, of the Association, of the following members:

Edward Benjamin Arnold, elected 1907.

Lester Williams Clark, Jr., " 1897.

David Hamilton Gildersleeve, " 1907.

Algernon Knox Johnston, " 1893.

David Fremont Simonson, " 1906.

Dr. Arthur Hollick referred to the congested condition of the museum and library and the necessity for making provision for larger quarters and more extensive equipment as soon as possible, and offered the following resolutions:

Resolved: that the president be requested to appoint a committee on legislation, to consider and report to the Board of Trustees what amendment or amendments to the charter of the Association may be necessary in order to enable the City to erect a suitable building for the museum and library of the Association and to provide for its care and maintenance.

Resolved: that the Board of Trustees be requested to take such further action as may be necessary, looking to the drafting of a bill, securing its approval by the City, introducing it in the State Legislature, and endeavoring to secure its enactment, provided such action is deemed advisable.

The resolutions were unanimously adopted.

SCIENTIFIC PROGRAM

Dr. Arthur Hollick exhibited specimens and read a paper on Notes on Specimens Recently Collected in the Serpentine Area of Staten Island. (Printed in full in this issue, p. 31.)

Mr. William T. Davis read a paper on Notes on the White-breasted Nuthatch. (Printed in full in this issue, p. 34.)

Mr. Edward C. Delavan, Jr., read a paper on the early settlers of Staten Island.

Dr. Arthur Hollick exhibited a collection of Staten Island soils, sands, silts, and clays, prepared for museum display in sealed glass jars so that they may be handled like other geological and mineralogical specimens.

Mr. Charles P. Benedict exhibited the inflorescence of a wild carrot, *Daucus carota* L., with all of the florets purple.

The meeting then adjourned.

REGULAR MEETING, NOVEMBER 20, 1909

The meeting was held in the museum, Borough Hall, New Brighton.

President Howard R. Bayne in the chair.

About forty persons were present.

The minutes of the meeting of October 16, 1909, were read and approved.

The president announced that he had appointed Hon. William Allaire Shortt and Dr. Arthur Hollick a committee on legislation, in accordance with the resolutions adopted at the October meeting of the Association.

SCIENTIFIC PROGRAM

The president announced that the program for the evening was in charge of the Section of Biology, and resigned the chair to Mr. Charles L. Pollard, chairman of the Section.

Mr. Pollard stated that the program had been arranged to commemorate the one hundredth anniversary of the birth of Charles Darwin and the fiftieth anniversary of the publication of the scientist's *Origin of Species*, and outlined the principal factors concerned in the theory of evolution.

Dr. Frank E. Lutz, Assistant Curator of Invertebrate Zoölogy in the American Museum of Natural History, delivered an address, illustrated with diagrams and apparatus, on Recent Studies in Evolution.

Dr. William D. Matthew, Assistant Curator of Vertebrate Paleontology in the American Museum of Natural History, delivered an address, illustrated by lantern slides, on The Development of Species as Illustrated in the Evolution of the Horse.

On motion, a vote of thanks was unanimously tendered Dr. Lutz and Dr. Matthew for their courtesy in preparing and delivering their addresses; and Mr. Charles A. Ingalls for the use and operation of his stereopticon in illustrating Dr. Matthew's address.

The meeting then adjourned.

REGULAR MEETING, DECEMBER 18, 1909

The meeting was held in the museum, Borough Hall, New Brighton.
President Howard R. Bayne in the chair.

About thirty-five persons were present.

On motion, the reading of the minutes of the meeting of November 20, 1909, was dispensed with.

SCIENTIFIC PROGRAM

The president announced that the program for the evening was in charge of the Section of Art, and resigned the chair to Dr. John Q. Adams, chairman of the Section.

Dr. Adams introduced the speaker of the evening, Mr. Lewis F. Pilcher, Professor of Fine Arts in Vassar College, who delivered an address, illustrated by lantern slides, on Doric Architecture as Applied to the Sub-Treasury Building at Broad and Nassau Streets, New York City.

On motion a vote of thanks was tendered Mr. Pilcher for his courtesy in delivering the lecture; and Mr. Charles A. Ingalls for the use and operation of his stereopticon in illustrating the lecture.

The meeting then adjourned.

Proceedings of the Section of Biology

SPECIAL MEETING, OCTOBER 20, 1909

The meeting was held in the museum. The Section decided to take charge of the November meeting of the Association and furnish the entire program for that meeting, the chairman and the recorder being authorized to secure speakers for the meeting as a Darwin memorial.

Mr. Howard H. Cleaves reported having seen the nest of a blue-winged warbler near Huguenot, Staten Island, in May 1909. He reported also the breeding of the killdeer on Staten Island, as evidenced by the fact that he had found the mother bird with its young near Pleasant Plains.

Mr. William T. Davis showed and commented on some rare insects from Helmetta and Jamesburg, New Jersey, among which were *Orchelimum pulchellum* Davis and *Cicada sayi* Grossbeck, the latter accompanied by a stick showing hole made by the ovipositor of the insect.

NOVEMBER 20, 1909

The regular meeting of the Association on November 20, 1909, was held in the museum under the auspices of the Section, the president of the Association, Hon. Howard R. Bayne, presiding. The scientific program was a Darwin memorial, commemorating both the one hundredth anniversary of Charles Darwin's birth and the fiftieth anniversary of the publication of his most important work, *The Origin of Species*. An account of the meeting will be found in the minutes of the Association. The program follows:

Introductory Address

Mr. Charles L. Pollard, Chairman of Section of Biology.

Recent Studies in Evolution

Dr. Frank E. Lutz, Assistant Curator of Invertebrate
Zoology in the American Museum Natural History.

The Development of Species, as Illustrated in the Evolution
of the Horse

Dr. W. D. Matthew, Assistant Curator of Vertebrate
Paleontology in the American Museum of Natural
History.

Publications of the Association

I. PROCEEDINGS OF THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND

These PROCEEDINGS were printed in octavo numbers, partly in leaflet and partly in pamphlet form, from November 10, 1883, to June 3, 1905, and were included in nine volumes, separately indexed.

They may be obtained by members and patrons at \$1.25 per volume. To others the price per volume is \$2.50.

Single numbers of back volumes may be obtained at 10 cts. each, except the following, for which a uniform price of 50 cts. each will be charged:

Special No. 21, Vol. V, No. 5, March 14, 1896, "Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 56, and map by Chas. W. Leng.

Special No. 22, Vol. VII, No. 15, March 10, 1900. "Colonel Francis Lovelace and His Plantations on Staten Island." Edward C. Delavan, Jr. Pamph., pp. 33, pls. i-iv.

Special No. 23, Vol. VIII, No. 25, October, 1903, "Supplement to Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 22 and map.

Only a limited number of complete sets of the older volumes are now in stock, and orders for these will be filled in the order of application. The right is reserved to withdraw any part or numbers from sale at any time.

2. PROCEEDINGS OF THE STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

These PROCEEDINGS are printed in octavo parts, four parts to a volume. They contain the business and scientific records of the meetings of the Association and are sent free to all members and patrons in good standing.

By resolution of the Association all members and patrons may obtain back parts at 25 cts. or back volumes at \$1.00. To others the price is 50 cts. per part or \$2.00 per volume, for both current and back issues.

Volume I, including Title Page, Table of Contents, and Index, contains:

Part I, June-December, 1905, pp. 1-20, issued April 10, 1906.

Part II, January-May, 1906, pp. 21-69, issued July 9, 1906.

Part III, October-December, 1906, pp. 71-92, issued April 17, 1907.

Part IV, January-May, 1907, pp. 93-136, issued September 20, 1907.

Volume II, with Title Page, Table of Contents, and Index, contains:

Part I, October 1907-January 1908, pp. 1-46, issued October 17, 1908.

Part II, February-May, 1908, pp. 47-124, issued September 30, 1909.

Part III, July 1908-February 1909, pp. 125-177, issued August 18, 1910.

Part IV, March-May, 1909, pp. 179-251, issued September 16, 1910.

Volume III, Part I, October-December, 1909, pp. 1-54, issued April 28, 1911.

The Act of Incorporation, Constitution and By-Laws, etc. (Pamph., 8vo, pp. i-xxv, 1906) and the special "Memorial Number," issued in commemoration of the celebration of the 25th anniversary of the organization of the Natural Science Association of Staten Island (Pamph., 8vo, pp. i-xxxvii, 1907), will be sent free on application.

3. THE MUSEUM BULLETIN

Monthly octavo leaflets, containing official notices of meetings of the Association and descriptive items concerning the Museum exhibits. Begun in August, 1908. Current numbers sent free on application. Back numbers 2 cents each.

Checks should be made payable to the Staten Island Association of Arts and Sciences, and all remittances and communications addressed to

Staten Island Association of Arts and Sciences,

New Brighton, N. Y.

MUSEUM STAFF

Curator-in-chief

Charles Louis Pollard, M.A.

Museum Assistant

Miss Agnes L. Pollard

DEPARTMENT OF ZOOLOGY

William Thompson Davis, *Honorary Curator*

James Chapin, *Honorary Assistant*

DEPARTMENT OF BOTANY

Philip Dowell, M.A., Ph.D., *Honorary Curator*

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John Quincy Adams, Ph.D., *Honorary Curator*

DEPARTMENT OF BOOKS

In charge of the Museum Assistant

PROCEEDINGS
OF THE
STATEN ISLAND ASSOCIATION
OF
ARTS AND SCIENCES

EDITED BY

PHILIP DOWELL, ARTHUR HOLLICK, WILLIAM T. DAVIS
PUBLICATION COMMITTEE

CONTENTS

Two Seasons' Photographic Work with Sandpipers at Wolfe's Pond. HOWARD H. CLEAVES 55

Notes on Introduced Plants Collected near Arlington, Staten Island ARTHUR HOLLICK 62

An Addition to the List of Staten Island Frogs WILLIAM T. DAVIS 66

Do Not Burn the Woods WILLIAM T. DAVIS 68

The Redwing Changes its Nesting Site HOWARD H. CLEAVES 71

Literature Relating to Staten Island:

 Anthropological Papers of the American Museum of Natural History. Vol. III.
 The Birds of New Jersey. Dowell's Violets of Staten Island. Annual Report
 of the Board of Education of the City of New York. Gratacap's Geology of
 the City of New York. Notes in Connection with Specimens Recently Obtained
 from the Serpentine of Staten Island. Running Away from Folks. William
 Winter, the Dean of American Dramatic Critics. The Staten Island Museum 73

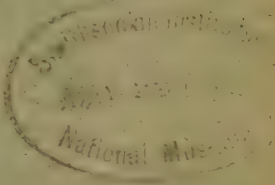
Records of Meetings 82

Annual Reports 88

Proceedings of the Section of Biology 108

[Issued May 2, 1911]

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THE STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

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President—Hon. Howard Randolph Bayne
First Vice-President—William Thompson Davis
Second Vice-President—William Hinman Mitchell
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Treasurer—Charles Arthur Ingalls

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PROCEEDINGS
OF THE
STATEN ISLAND ASSOCIATION
OF
ARTS AND SCIENCES

VOL. III

JANUARY-MAY, 1910

PART II

**Two Seasons' Photographic Work with Sandpipers at
Wolfe's Pond¹**

HOWARD H. CLEAVES

Needless to say, the spotted sandpipers are the only ones that remain to nest on Staten Island. During June, 1908, one of their nests was found at Prince's Bay. The site selected by the birds was near the edge of a tidewater creek which runs in a winding manner through a salt meadow. It was here that my first sandpiper photographs were taken.

The year before the finding of this nest, the meadows had been ditched by the Health Department in its campaign against mosquitoes. The effect on the meadows was marked. Barren spots appeared where water had stood before, and scattered over these places were innumerable blocks of peatlike turf, which had been thrown aside by the ditch diggers. Mother sandpiper, after being flushed from the nest, would sometimes fly to another part of the meadow. Soon, however, she could be seen cautiously threading her way back, and not infrequently she would, for the purpose of observation, run to the top of one of the above mentioned pieces of earth. The camera was now brought into play. All of the

¹ Presented February 19, 1910.

sandpiper's observation towers were removed, except one, and this was placed in a tempting position. The camera was concealed in some grasses, and was completely buried under drift material and small sods. A thread had been attached to spring the shutter, and, after causing the bird to leave the nest, I retired to a distance of thirty yards, took the thread in my hand and waited. Much to my satisfaction the sandpiper, in working her way back toward the nest, ran nimbly across an open place and made straight for the hummock in front of the camera. In another second her light breast appeared at the top of the clod, and the thread was pulled with much vigor. Although this incident occurred a quarter of a mile from Wolfe's Pond (the scene of all of the other sandpiper pictures), it serves as a fitting introduction to this paper.

Wolfe's Pond is perhaps the most peculiarly located body of fresh water on Staten Island. Along one portion of it a mere neck of land, less than fifty yards across at the narrowest point, separates it from the salt water of the ocean. An outlet at one end forms a creek which flows finally into Raritan Bay, but almost every spring there comes a storm that swells the pond until it overflows its banks and rushes out by the shortest route to join forces with the sea. At the other end, something less than half a mile away, the pond extends far up into a woodland where it receives water from a brook for a part of the year. On the easterly side a grassy pasture slope extends up from the shore of the pond, and on the westerly there are farm lands, a small pasture, and the barnyard of a dairy.

The first experiment with the sandpipers took place along the easterly shore. The camera (an old fashioned Blair, and the only one I possessed at that time) was placed on the ground near the water's edge and focused on some point to which a sandpiper was expected to come. Then it was covered with weeds and tufts of grass, and made to look as inconspicuous as possible. A thread was stretched some distance up the shore and everything was in readiness for the sandpiper. It was generally not long

before a bird was sighted somewhere along the water line, whereupon the photographer would gradually work him in the direction of the camera. If the bird finally arrived at the desired point in front of the spot, the thread was pulled and some result was assured. But not infrequently the sandpiper would fly before he was even near the camera, in which case it was necessary to retire until another bird arrived, when operations were started anew. Again, although the bird might pass in front of the concealed camera, it often occurred that he waded too far out or passed too close to be in the field of focus. On one or two occasions birds have actually gone up to the blind and caught insects that were on it, and many times they have run about behind the camera instead of in front.

One day a least sandpiper arrived at the pond. All attention was at once turned to him, and after about an hour's work he was photographed.

It was at about this time that the attractiveness of the barnyard on the other side of the pond was discovered; that is, its attractiveness for birds, if not for man. The soft muddy ooze under foot contained numberless larvae, for which some of the sandpipers probed with much dexterity. Insects were present in large quantities all over the surface of the ground, and were sought principally by the spotted sandpipers. There were several kinds of shore birds to be found here, however, and with one or two exceptions they all stuck pretty closely to the barnyard. There was one hard problem to be overcome. It was found that the area away from the shore was so attractive to the birds that they no longer followed the usual custom of feeding along the water line; and the water line was practically the only place where it was possible to photograph.

During August, when the migration was at its height, it was surprising to note the number of cripples and otherwise defective birds that came to the pond. One spotted sandpiper, when first seen, was flying in big circles out over the water. When he lit and was approached he ran a short distance up the shore, then

stopped and turned his left side to me, and again ran on up the shore. It was discovered that he was blind in the right eye. This bird bathed at short intervals by wading out up to his belly and splashing the water with his wings. Then he would stand on the shore preening his feathers for some time, and when all dry would go in for another bath. One day a flock of seven semipalmated sandpipers arrived at the cove in the barnyard, and one was lame. A solitary sandpiper that arrived on the scene limped perceptibly, but was nevertheless very wild, and would be off on the wing one moment and back on the shore the next. Then there was a poor least sandpiper that had been terribly wounded. One leg was drawn up painfully and remained always in that position. His tail had evidently been struck by a stray shot, for several of the feathers hung down out of place. Now and then he engaged in a little feeding, but for the greater part of the time he stood about in shallow water as if meditating. He was a pitiable object to behold, and no doubt perished before the migration southward had gone far, for in the bird world life is one great struggle for the survival of the fittest.

One day while I was working on the eastern side of the pond a semipalmated or ringneck plover wheeled in from the outer beach and lit on the same sandbar with the camera. At the time I was some distance from the end of the thread that connected with the camera, but hastened to reach it as quickly as possible. The bird ran a few steps and stopped at the exact point upon which the camera had been focused. However, before the thread could be reached, he had moved out of position, and a few seconds later took wing and was off again to the outside beach. This opportunity has never been repeated.

All sorts of exasperating experiences and conditions were constantly occurring. When work was being done on the eastern shore, people passed not infrequently, and generally happened along just as a half hour's work was about to be brought to a successful conclusion. Or perhaps just at the critical moment a cloud would drift across the sun and hopelessly darken things.

A shaggy-haired dog had the habit of swimming about the pond in pursuit of a small sailboat. He one day came to shore near the camera, got mixed up in the thread, set off the shutter and spoiled a plate. A Frenchman who passed at a certain time almost every Sunday morning became extremely interested in my work. He would stand at my side and keenly follow the movements of the sandpiper on the shore. If the bird started to run in the wrong direction or showed an inclination to fly, an exclamation of disappointment would escape from the foreigner. But if the bird finally chanced to tarry for a moment at the desired point, and the thread was pulled at the proper instant, the Frenchman would gesticulate wildly and express his approval. Once he was so excited after an exposure had been made that his feet became entangled in the thread and the shutter was sprung twice on the same plate. That night, when the plates were developed, it was found that the one spoiled by the Frenchman would have been one of the choicest of the lot.

One afternoon, while working with a semipalmated sandpiper, I became so absorbed in what I was doing that it was not observed that 150 cows were rushing into the barnyard back of me. Suddenly, however, the sandpiper flew apparently for no reason. Then there was a clatter of hoofs behind me, and it was by the narrowest margin that the camera was rescued from the stampede.

In the early spring of the present year the purchase of a *Graflex* camera revolutionized the possibilities in bird photography. It came at the beginning of the busy season, and a list of undertakings from barred owls to long-billed marsh wrens was mapped out. But the hazy month of August, with its sandpiper joys, was not forgotten. A thread, shutter-release attachment was made for the new camera, a special blind for it (to use along the shore) was constructed, and by late July everything was in readiness.

The blind proved to be a great success, and it was pressed into service on every possible occasion. On week days after business,

on Saturday afternoons, and on Sundays I haunted the shores of Wolfe's Pond. The result was that by the middle of August a passable series of spotted sandpiper photographs had been secured, and it was planned to devote the remainder of the season to the migrants from the north. A week's vacation, from August 16 to 23, had been secured, and most of it was to have been spent in the barnyard. But alas, for the first three days of that week, it will be recalled, there occurred the heaviest rainfall for the month of August that this section has known for many years. The pond was flooded, its water line was completely changed, and its banks were in such a wretched condition that photography was out of the question for many days. The storm seemed to have had its effect on the migration as well; at all events sandpipers were painfully scarce, and only one semipalmated was seen during the entire season. This individual, for some reason, objected to passing in front of the blind, and the best that could be done in his case was to stalk him with the camera held in the hand. Three plates were secured in this manner, but the image of the bird in each case was small and unsatisfactory.

One of the hired men in the dairy had for some time manifested a considerable interest in my operations, and when I arrived at the barnyard on Sunday mornings he would tell whether any birds had been present during the week. Once he said that a flock of "siven of thim yung ones" had been there for a whole day but he had not seen them since.

One day in early September I had the pleasure of taking Mr. Clinton G. Abbott to the barnyard, and one spotted and two solitary sandpipers were kind enough to appear on the scene. The spotted walked obligingly into place in front of each of our cameras once, but after that he positively refused to be photographed. A certain section of the cow yard back from the shore held out strong inducements to him, and after trying at least a dozen times to get him to return to the water line (and to our cameras) we gave him up.

The two solitary sandpipers were wary creatures, springing into the air and making short flights, running about nervously, and wading out belly-deep in the water and keeping one in constant fear that they might at any moment be gone for all time. In fact one of them did disappear entirely, and the one that remained seemed all the more wary. However, after many provoking disappointments several exposures were finally secured.

The pond was not visited again until October 10. It was not expected that any sign of life would be present in the barnyard at this late date but on scanning the shore of the cove I detected a sandpiper. He was preening himself, and as I approached a little closer I could see that this was a new species to me. I did not have my camera blind with me, but did the best I could to photograph him with the camera held in my hand. As many as possible of his characteristics were noted, and his photograph and description were sent to Mr. Waldron DeWitt Miller of the American Museum. Mr. Miller was kind enough to tell me that the bird was undoubtedly either a white-rumped or a pectoral sandpiper, and that it was probably a pectoral, because my description said that the white patch on the rump was divided by a dark stripe.

The last shore bird episode for the present season did not find its setting at Wolfe's Pond, but on the wild, outside beach of Crooke's Point, several miles up the shore. Mr. William T. Davis, Mr. Alanson Skinner, and I had spent a pleasant day on the point. During the return trip along the beach, in the late afternoon, two sanderlings, or surf snipe, were seen feeding along the sandy stretch ahead of us. We at first thought that the birds were of a wild nature, but as we approached they did not fly, and finally we were observing them from a distance of only a few feet. Their tameness was almost unbelievable. The lens of the camera was split up so as to give one magnification, and in one or two instances it was necessary to back away from the birds to bring them into the field of focus. They were photographed until the plate supply was exhausted, and then my only regret was that I did not have more plates.

Notes on Introduced Plants Collected near Arlington, Staten Island¹

ARTHUR HOLLICK

Land that has for its foundation a natural area of salt marsh, with an artificial superstructure composed of garbage, street sweepings, ballast from vessels, refuse from freight cars, and cinders from engines and manufacturing establishments, with a maze of railroad tracks gridironing the surface, is not apt to appeal to the casual observer as a locality that may be studied with either pleasure or profit, and is more than likely to be avoided. Such a locality lies just beyond Arlington station on the North Shore Division of the Rapid Transit Railroad, and at certain seasons of the year it may be sensed by the nose before it is fully revealed to the eyes. Nevertheless it is a region replete with interest to the botanist and, to a certain extent, to the student of social economy. The botanist will find there many interesting introduced plants, and he who is interested in social economics may note and discuss the exigencies of civilization which brought them there and the effects that may result from their introduction.

Probably all except a very few of the plants now growing there were introduced as seeds in the refuse that had been used for filling in the salt marsh. Some species exist only for a single season and then disappear, but others become established as permanent and often undesirable citizens, pressing hard upon and frequently spreading into and crowding out the adjacent native vegetation; and it is a significant fact that nearly all of our most troublesome weeds have come to us in this way.

Those derived from the garbage deposits include the potato, tomato, pea, bean, pumpkin, muskmelon, watermelon, gourd, turnip, grape, apple, orange, etc., and are not fitted to persist, either

¹ Presented April 16, 1910.

by reason of the climatic conditions or the unfavorable environment. They served their original economic uses as food products, and such of them as are represented in a further struggle for existence during a single season are of interest mainly as indicating the vegetable resources that were utilized by the community as part of its food supply.

The plants of greatest botanical interest are those which originated from seeds brought in the ballast of vessels from foreign ports, or in fodder and packing material in freight trains from the south and west. Many of these become naturalized, and remain as permanent additions to our flora.

At our April meeting last year I exhibited and gave memoranda on certain of the grasses and sedges collected at this locality and I am now able to show some of the higher plants found associated with them. Many of the species are common in waste places elsewhere and do not call for special reference or discussion; others, however, are not only new to our local flora but have not heretofore been reported from the eastern United States. For this reason some difficulty was experienced in correctly identifying them and a few yet remain undetermined.

Following is a list of those which were collected as most characteristic of the locality in the autumn. The species new to our local flora are designated by an asterisk.

Commelina nudiflora L.*

Tropical America, Asia and Africa.

Chenopodium anthelminticum L.*

Europe. Common in waste ground.

Chenopodium vulvaria L.*

Europe.

Atriplex patula L.

Europe. Common in waste ground.

Amaranthus spinosus L.*

Tropical America.

Amaranthus graecizans L.

Tropical America and western United States. Common in waste ground.

Amaranthus deflexus L.*

Tropical America.

Lepidium medium Greene.*

Southwestern United States.

Sinapis alba L.*

Europe. Common in waste ground.

Brassica arvensis (L.) B.S.P.

Europe. Common in waste ground.

Brassica campestris L.

Europe. Common in waste ground.

Diplotaxis muralis (L.) DC.

Old world.

Raphanus raphanistrum L.

Europe. Common in waste ground.

Roripa palustris (L.) Bess.

Europe. Common in waste and low ground.

Camelina sativa (L.) Crantz.

Europe. Common in waste ground.

Koniga maritima (L.) R. Br. Sweet alyssum.

Cultivated.

Cleome spinosa L.*

Tropical America.

Cleome pentaphylla L.* [*Pedicellaria pentaphylla* (L.) Schrank.]

Tropical America.

Sesban macrocarpa Muhl.*

Southern and western United States.

Phaseolus vulgaris L.* Kidney bean.

Cultivated.

Ricinus communis L.* Castor oil bean.

Cultivated.

Euphorbia pilulifera L.*

Southern United States and West Indies.

Heliotropium europaeum L.

Europe. Common in waste ground.

Physalis pubescens L.

Pennsylvania and southward.

Solanum nigrum L.

Common everywhere.

Sesamum indicum L.*

Asia and Africa.

Lagenaria lagenaria (L.) Cockr.* Club gourd.

Cultivated.

Cucurbita pepo L.* Pumpkin.

Cultivated.

Cucumis melo L.* Muskmelon.

Cultivated.

Citrullus citrullus (L.) Karst.* Watermelon.

Cultivated.

Helianthus annuus L. Sunflower.

Cultivated.

An Addition to the List of Staten Island Frogs¹

WILLIAM T. DAVIS

Between the railroad station at Annadale and Seguine's Pond, there are several marshy places and one little artificial pond. For several years we have heard in these lowlands, from the middle of March to the first week in May, the song of what we considered to be the swamp tree frog, *Chorophilus triseriatus* (Wied.). Mr. James Chapin first called attention to the frogs, and several efforts were made to secure specimens, but owing to the small number of individuals and the unfavorable character of the days at our disposal, which were either too windy or too cold, we were unsuccessful.

On the twenty-ninth of last March, a warm and quiet day, I visited Annadale with the hope of finding the frogs. While I was at a distance several were heard in the little pond, and after much waiting one sang again. The day was so quiet that the surface of the grassy pond could be minutely examined with a glass, and it was not long before the yellowish colored air sack at the throat of the frog could be seen as it dilated or subsided with his song. It was an easy matter to wade with almost imperceptible progress toward the little frog and finally to capture him with a sudden stroke of the net. There were at least five males in the pond, and two were collected, the others being left to keep alive the colony.

When all is quiet these little frogs raise themselves considerably above the water and expand their air sacks and sing. If slightly disturbed they often withdraw, leaving only their eyes and nose above water. A trifle more disturbance and they retire completely.

They keep the air sack distended often for fifteen or twenty

¹ Presented April 16, 1910.

minutes whether they are singing or not, but if you approach them, they let out all of the air and it collapses. This they do previous to diving out of danger among the water plants.

Several years ago I put one of these frogs under a glass shade, where there were a Pickering's frog and a cricket frog. It acted quite differently from these species, which generally keep themselves out in view and are active and desirous of catching flies. On the other hand *Chorophilus* hid himself away beneath a bunch of sumach berries lying near the water, and from the day he was put under the shade until he was bottled, about a week in all, I do not think he ever left his retreat. One of the Annadale specimens, which was kept alive for about two weeks, was fond of secreting himself between a stone and the side of the aquarium or otherwise hiding himself away.

In New Jersey I have either seen or heard *Chorophilus triseriatus* at the following localities: Newfoundland, May 8; Little Falls, March 12; Plainfield, May 6; Jamesburg, April 4, and Lakehurst in April.

Do Not Burn the Woods¹

WILLIAM T. DAVIS

Nearly all of the unoccupied land on Staten Island, whether woodland or meadow, has of late been burned over annually. State Forest Commissioner Whipple, in an address before the Staten Island Association of Arts and Sciences delivered several years ago, commented upon the fact, and was surprised that the residents of the island tolerated such a wasteful practice. Very few of the fires are accidental, but are usually started by ignorant or malicious persons.

Under the heading Wasteful to Burn Grass, a writer in a late issue of *The New York Times* has this to say: "The wastefulness of burning grass is perhaps not generally realized. By the burning of dead grass we remove the material which is to furnish humus and bacteria essential for plant growth. Resulting from this burning we have temporarily a small amount of ash which stimulates a quick and unhealthy growth of grass, but the soluble parts of the ash are rapidly washed away by rains, so that we have not only a great loss from destruction of humus and bacteria but also a loss of part of the small valuable residue. Land subjected to grass fire must therefore quickly 'run out' unless manure is added subsequently to take the place of the burned grass, and this is not commonly done."

Fire in the woodland results in even greater destruction, and the bushes and young trees, and often the older ones as well, are either killed outright or severely damaged. There cannot be a fire without a loss, and by burning his woods or his meadow a man simply parts with a considerable amount of his property in smoke and gases.

In an article on the cost of living, contributed to *The Inde-*

¹ Presented April 16, 1910.

pendent for March 31, 1910, Prof. Seligman shows very conclusively that the adjustment between wages and commodities will right itself as it has in the past, and that the real cause for concern is the "lessening of the powers of man over nature, and the failure of the same exertion to yield corresponding results." He mentions the prodigal waste of natural resources and the butchery of our soil, and there is no greater butcher of woodland and meadow than the destroyer fire.

Within the past few years several barns and many fences have been consumed on our island by these wasteful woodland fires, and since 1864 over forty kinds of wild plants have been exterminated; that is to say, we have lost on an average one species of plant every year. At present this destruction is going on faster than in the past, and many other kinds of plants are nearly exterminated. The ground where these plants once grew is not used for any purpose; it has simply been burned over and over again until the plants have been killed.

What would be thought of the result if the northern and more wooded part of Central Park, Manhattan, were burned over, annually destroying many of the small trees, bushes, and dry leaves, and making the place a blackened ruin? How much less attractive the park would be. Rightly enough great precautions are taken to prevent this in the parks, and what is good for the parks is also good for our island.

We take it that many of the families who reside on Staten Island and have homes in the country, have located with a view to enjoying the natural surroundings, and will be most regretful when these are a thing of the past. They will tell you that they admire the wild flowers and are interested in the birds, but the conditions that are being unnecessarily rushed upon us by a few ignorant persons are fast destroying these things.

It has always paid from a real estate point of view to have the beauties of nature near at hand, as to witness the value of property near to parks, and such real estate ventures as Laurence Park at Bronxville.

While Staten Island originally possessed natural scenery surpassing most of the places within a few miles of the City Hall, it has not managed its birth right very well, and now we have annually the misfortune to go walking on charcoal when we would go afield. What is the use of the Department of Education of the City of New York having lecturers discourse on The Beauties of Nature when the beauties themselves are deliberately destroyed?

This article has been prepared with the hope that those who read it will do what they can to preserve our island from the destroyer, and that the teachers in the schools will mention the matter to the children and request their coöperation in preserving the wild flowers and the trees; ask them not to set fire to the woods, as it makes us all poorer and the island less beautiful and interesting.

The Redwing Changes Its Nesting Site¹

HOWARD H. CLEAVES

One of the very commonest of our common birds is the redwing blackbird. Go to almost any marsh, stream, or pond from early March to the end of the nesting season and you will see this black fellow with the crimson shoulder patches, perched at the top of some tree and giving forth his liquid "Kon-ker-ee" song. The females do not arrive from the south until several weeks after the males, and if it were not for the frolicsome dashes that the latter perform in making love to their brown-striped mates, you might not suspect that the two birds were in any way related.

The nesting place of the redwing, as I have intimated, is near water of some kind, on the edge of a pond in a tussock of grass, in a shrub on the bank of a creek, or attached to grasses in a marsh or swamp. But a radical change has been made in the nesting habits of the redwing in a certain locality at Prince's Bay. During June, 1909, while photographing bobolinks in an upland meadow at that place, I came upon the nest of a redwing, which contained two eggs and which was supported by a cluster of daisy stems. The nest was four or five inches from the ground and resembled in general the nests that are characteristic of the salt meadows, although the nearest salt marsh was distant over a quarter of a mile. Later in the day, in the same field, a second nest was discovered, this one containing four eggs. There were certainly more nests in the vicinity, for there were as many as four females hovering above my head at one time.

So it would seem that the redwing has permanently established himself in this strange environment, which is so peculiarly foreign to his usual habitat. Naturally we seek an explanation, but a satisfactory conclusion is not easily arrived at. One fact, how-

¹ Presented before the Section of Biology, April 9, 1910.

ever, that may or may not suggest a plausible theory is that a few years ago the Health Department caused to be drained the salt meadows that had formerly been the natural nesting grounds of the redwings. The ditching of these places and the resulting dryness of sections that had previously been covered by several inches of water, made it possible for crows to alight and walk



Daisy field where redwings nest.

where they pleased on the marshes; and on not a few occasions I have found redwings' nests with linings disheveled and eggs gone. In a few instances the footprints of the marauders could be seen in impressionable mud near by.

It would seem, then, that although the redwing returns each year to the same general locality, he is gradually adopting an entirely different environment in that locality for his nesting site.

Literature Relating to Staten Island

ANTHROPOLOGICAL PAPERS OF THE AMERICAN MUSEUM OF NATURAL HISTORY. VOL. III¹

The first 62 pages of this volume, with five text figures, twelve plates, and map of Indian village sites, are devoted to a consideration of the Lenapé Indians of Staten Island by Alanson Skinner. The author considers the subject under the heads of Archaeological sites, Collections of Specimens, Description of Specimens, History and Ethnography of Staten Island, Cultural Reconstruction, Resumé, and Bibliography. According to Mr. Skinner the Indians found on the island upon the arrival of the first white settlers belonged to the Unami division of the Lenni Lenapé or Delaware Indians. The local band known as the Hackensacks occupied the north shore, and the Raritans the southern end of the island. The evidence of this division is found in the implements discovered on the village sites of the two areas mentioned.

In the introduction to the volume, which contains eight other articles on the Indians of Greater New York, the editor points out that the work on Staten Island is more advanced than that of Manhattan and the adjacent shores. He further states: "This Island presents somewhat unique conditions in that it constitutes a definite geographical unit of convenient size but without effective barriers to intrusion; that its archaeological remains seem to have belonged to one and the same culture, that of the historic Indians; and in that it appears to have been uninhabited during remote times."

W. T. D.

¹Hudson-Fulton Publication. The Indians of Greater New York and the Lower Hudson. Edited by Clark Wissler. 1909.

THE BIRDS OF NEW JERSEY¹

As Staten Island is geographically a part of New Jersey, this report should be of considerable use to our local naturalists. Most of the plates have been reproduced from the works of Wilson and Audubon, and the aim in the text "has been to present keys and descriptions that will enable any one to identify birds that he may see, to give a brief sketch of the more characteristic habits of the common species, and at the same time to include such facts and records on the distribution of all species as will make the report a thoroughly up-to-date list of the birds of the State." An extensive bibliography of New Jersey ornithology is also given.

W. T. D.

DOWELL'S VIOLETS OF STATEN ISLAND¹

In this paper we have, for the first time, the results of a study of our local species of violets from the standpoint of modern methods of scientific investigation, in consequence of which our list of recognized species is considerably extended and a number of new hybrid forms are added. Of the latter only those were admitted which were kept under observation through at least one season, and the author states that a number of others, of doubtful identity, might have been included. The number of recognized species is twenty-two, and the number of hybrids thirty, of which latter ten are here described as new, eight of them being figured. Each figure shows the entire plant, and they are exceptionally good in regard to details, especially as regards the rootstocks and the form and nervation of the leaves.

It is of interest to note the significant remark of the author that "It is not surprising . . . to find so many hybrids, when we consider the fact that the trees are being cut down in the wood-

¹ Witmer Stone. Report of the New Jersey State Museum, pp. 11-347. plate 84. 1908.

² The Violets of Staten Island. Philip Dowell, Bull. Torrey Club 37: 163-179. pls. 11-18. 29 Ap 1910.

lands and the natural surroundings of the plants continually disturbed. It seems that under the changed conditions they hybridize more freely. In this connection it is interesting to note that while it is difficult to find typical *F. hirsutula* [a woodland form], several of its hybrids have been found growing in its immediate vicinity."

This paper demonstrates what may be accomplished by painstaking, intensive work, and it should serve as a stimulus to encourage similar work on other groups of plants.

A. H.

ANNUAL REPORT OF THE BOARD OF EDUCATION OF THE CITY OF NEW YORK¹

This is a folio volume, containing, in addition to statistical tables of expenditures and resources for public school education, a series of photographs which include pictures of the buildings and diagrams of the sites of every public school in all five of the boroughs. Staten Island's thirty-five elementary and one high school are illustrated and described on pages 200-233. The brief facts recorded in regard to locations, method by which the sites were acquired, dates of acquisition of the sites and erection of the buildings, cost of the sites and of the buildings, etc., are interesting, and the pictures will be of great historic interest to future generations. It is to be regretted that we have not a similar series showing the old district schools, which the present buildings replaced, such ones for example as those at Bogardus' Corners, Richmond Valley, and Green Ridge.

A. H.

¹ Annual | Financial and Statistical Report | of the | Transactions | of
the | Board of Education of the City of New York | for the Fiscal and
Calendar Years | 1906-1907-1908 | . Egerton L. Winthrop, Jr., Presi-
dent | John Greene, Vice-President | Henry R. M. Cook, Auditor | John
Greene, Chairman | Lewis Haase | Hugo Kanzler | Ralph McKee | Rupert
B. Thomas | Committee on Finance | New York, 1909.

GRATACAP'S GEOLOGY OF THE CITY OF NEW YORK¹

This is an elaboration of the author's two previous works on the same subject, issued, respectively, in 1901 and 1904, and two separate papers, entitled, respectively, Evidences of Glacial Action in and around Greater New York, published in New York Teachers' Monographs 1:92-107. 1898, and The Ice Age, Pop. Sci. Monthly 12:319-327. 1878. Reviews of two of these publications may be found in our PROCEEDINGS for Oct. 15, 1904, and Oct. 8, 1898, under Literature Relating to Staten Island.

In a work which contains so much that is interesting and valuable it is not a pleasant task to begin a review with what may appear to be a mere criticism of the author's peculiarities of style; but it is impossible to ignore certain features of terminology and nomenclature in the Introduction which must necessarily be confusing to the mind of the average reader, who can not be expected to be well versed in such matters.

For example, the author says "Geologic Time has been separated by American geologists into a number of subordinate time groups. . . . The chart of geologic time, *prepared and recognized by American geologists, follows* (the italics are the reviewer's).

An analysis of this so called chart shows such an extraordinary mixture of terminology that it is difficult to imagine who the geologists were that prepared it and what geologists would recognize it. The primary divisions of the pre-Mesozoic and post-Mesozoic time groups are designated "eras" (Laurentian Era, Upper Silurian Era, Tertiary Era, etc.), but the coördinate divisions of Mesozoic Time are called "periods" (Triassic Period, Cretaceous Period, etc.); and this peculiar inconsistency is further exemplified by the subdivision of the Upper Silurian "Era" into the Niagara, Onondaga, and Lower Helderberg "Periods"! It would be interesting to learn how any similar coördinate sub-

¹Geology | of the | City of New York | with numerous illustrations and maps | by | L. P. Gratacap, A.M. | American Museum of Natural History | Third Edition, Enlarged | New York | Henry Holt and Company | 1909 | . 8^{vo}, cloth, x + 232 pp., with 65 figures and 4 maps.

divisions of the Triassic Period would be designated by the author; but we may perhaps assume that inasmuch as he subdivides an era into periods a period may be subdivided into eras, as they appear to be interchangeable in the code of terminology which he has adopted.

The term "epoch" is also incidentally used, in connection with the Trenton group of limestones, in a sense coördinate with that in which "period" is used in connection with the Lower Helderberg group of limestones. Thus "era," "period," and "epoch" are inextricably involved, and the loose and more or less vague application or explanation of other terms, such as "zone" and "age" add still further to the confusion.

Another inconsistency may also be noted in the mixture of new and old nomenclature in connection with names applied to the primary time group divisions. The older and more generally recognized names (Cambrian, Devonian, Cretaceous, etc.) are used throughout, with one exception, the substitution of Carbonic for Carboniferous. Under every consideration of consistency and uniformity the older name should have been used; or else Cambrian, Devonian, Cretaceous, etc., should have been replaced by Cambric, Devonian, Cretacic, etc. It may be noted, however, that the term "Carboniferous" is utilized in subdividing the Carbonic into Lower Carboniferous, Carboniferous, and Permian!

If represented in the usual conventional manner the author's expressed ideas in regard to the geologic column would appear as follows:

Cenozoic Time.	Quaternary Era. Tertiary Era.
Mesozoic Time.	Cretaceous Period. Jurassic Period. Triassic Period.

Paleozoic Time.	Carbonic Era	{ Permian. Carboniferous. Lower Carboniferous.
	Devonian Era.	
	Upper Silurian Era	{ Lower Helderberg Period. Onondaga Period. Niagara Period.
	Lower Silurian Era	{ Hudson Epoch. Utica Epoch. Trenton Epoch. Chazy Epoch. Calciferos Epoch.
	Cambrian Era.	
Archaean Time.	Huronian (Algonkian) Era.	
	Laurentian Era.	

Other peculiarities in style of diction and text arrangement are so obvious they can not fail to attract attention and will either amuse or exasperate the reader, according to his temperament or the spirit in which he is perusing the book; but these features need not be noted here. The introductory chapter may be skipped and then the remainder of the work may be read with pleasure and profit by anyone who possesses even an elementary knowledge of the principles of geology and an interest in the natural features of his environment. The chapter which will appeal with special interest to the members of our Association is the one with the caption Borough of Richmond (Staten Island), included on pages 171-186, with excellent views of the Triassic trap rock quarry at Elm Park and the Cretaceous clay and sand pits at Kreischerville. This chapter presents most of the salient facts of our local geology in a pleasing manner, in language that the layman can understand. The succeeding chapter, on Evidences of Glaciation in and about Greater New York also contains many references to the phenomena of the Ice Age on Staten Island, and a picture of "sugar-loaf rock" on Grymes Hill.

The various articles, notes, and memoranda directly or indirectly relating to our local geology, which have appeared from time to time in our PROCEEDINGS and elsewhere, are freely utilized and cited—with due credit, and the result is a brief résumé of the features that are most likely to attract the attention and enlist the interest of the amateur scientist and casual observer. To the advanced student and scientific investigator, however, the treatment of the subjects will prove disappointing, on account of its brevity and incompleteness; but at the same time it is certain to arouse a desire to learn more about the matters touched upon and outlined. In this connection it may be pertinent to remark that the scientific value of the work would have been greatly enhanced if the author had mentioned that all of the Staten Island rocks, minerals, fossils, etc., described or referred to, could be seen and examined, not only in the field, but also by means of the collections in our museum, and that the literature cited could be found and consulted in our library.

A. H

NOTES IN CONNECTION WITH SPECIMENS RECENTLY OBTAINED FROM THE SERPENTINES OF STATEN ISLAND¹

This is a brief description of the serpentine area of Staten Island, with references to previous investigations and theories, and descriptions of recent exposures and the minerals obtained from them.

The statement is made that "This area has been under observation for a longer period than any other local geological formation, and yet we know as little today in regard to its exact stratigraphic relations as was known when it was first studied;" and the final words of the paper are: "Any suggestions in relation to the manner in which the serpentine should be indicated, in depicting a geologic section across Staten Island, would be welcomed."

¹ Arthur Hollick, *Annals New York Acad. Sci.* 19: 315-317. 1909.

The author acknowledges his indebtedness to Dr. Charles P. Berkey for the preparation of rock sections for microscopic examination, and to Dr. Alexis A. Julien for their critical study. The conclusion reached in regard to the serpentines and their associated minerals is to the effect that "numerous field observations and determinations of the mineral constituents by microscopic examination, indicate conclusively that all had a common origin and that this was a basic igneous rock such as an enstatite or a pyroxenite.

Ph. D.

RUNNING AWAY FROM FOLKS¹

This is a breezy little sketch of some of the localities in and around New York City, to which the person with little time and money at his disposal may make brief and pleasant journeys. A trip through Staten Island is described, via the Richmond Turnpike, Howard Avenue, the Serpentine Road, and thence to Richmond, and an excellent picture is included of the view from the heights above Silver Lake, looking over the Kill von Kull to New Jersey. The writer is a little hazy in regard to his geology, however, when he describes our range of serpentine hills as "the great glacial moraine that runs down the island like a spine," and his guess was a good many miles out of the way when he mentions Richmond Hill as the terminus of the "glacial ridge." However, he says, "we left Manhattan after lunch; we are back again by dinner-time," so there was hardly time to bother very much about facts.

A. H.

WILLIAM WINTER, THE DEAN OF AMERICAN DRAMATIC CRITICS¹

This is a biographical sketch of our talented fellow citizen and an appreciative account of his work as a dramatic critic, with

¹ Walter P. Eaton. Harper's Bazar, April 1910, illustrated with pictures by Walter K. Stone.

¹ Walter Prichard Eaton. Munsey's Magazine 42: 820-826, *with portrait*. Mr. 1910.

incidental comment upon his literary style and his status as a poet, a wit, and a satirist. The portrait is a reproduction of a photograph by Almstaedt and it could hardly be improved in any detail.

A. H.

THE STATEN ISLAND MUSEUM¹

This paper gives an outline of the evolution of the Staten Island Association of Arts and Sciences from the original Natural Science Association of Staten Island, and a brief account of some of the principal features of the museum exhibits. Probably one of the most significant remarks in regard to the museum visitors is to the effect that those who attend most frequently are not members of the Association or their friends but are drawn from the general public.

A. H.

¹ Charles L. Pollard. Proc. Am. Assn. Museums 3: 25-29. 1909.

Records of Meetings

REGULAR MEETING, JANUARY 15, 1910

The meeting was held in the museum, Borough Hall, New Brighton.

First Vice-president William T. Davis in the chair.

About twenty-five persons were present.

The minutes of the meetings of November 20, 1909, and December 19, 1909, were read and approved.

SCIENTIFIC PROGRAM

Dr. Arthur Hollick exhibited photographs taken under his direction by Mr. Howard H. Cleaves, showing the geologic section exposed in the cut made for the retaining wall on the east side of Jay Street, opposite Borough Hall, together with specimens of the serpentine rock obtained from the outcrop at the base of the cut, which is about at tide level.

The rock was found to be free from the weathering characteristic of the hill surfaces but much fractured and traversed by numerous shear planes and pressure zones and largely altered into a hard antholite schist. The section showed about six feet of serpentine at the bottom with about thirty feet of bowlder drift above.

Mr. William T. Davis gave an account of a recent visit to Yaphank, Long Island, with notes on the fauna and flora of the locality.

Of special interest was a colony of hermit thrushes, *Turdus aonalaschkae pallasii* (Cab.), which nest there, described by Mr. Davis in the Auk for October, 1909.

The presence of a European cricket, *Gryllus domesticus* L., in a farmhouse was noted.

Mr. Davis exhibited specimens of fresh water sponges; a peculiar form of *Smilax rotundifolia* L., having panduriform leaves, from the same locality; a specimen of the brook lamprey, *Ammocoetes branchialis* (L.), from Ramsey, New Jersey; also *Gordius* worms, commonly known as "horsehair snakes," parasitic in the intestinal canals of beetles and crickets.

Mr. Davis commented on the fact that he had frequently found the flowers of the yellow gerardia, *Dasystoma flava* (L.) Wood, punctured by bees in their search for honey before the blossoms had opened in the early morning.

The meeting then adjourned.

REGULAR MEETING, FEBRUARY 19, 1910

The meeting was held in the museum, Borough Hall, New Brighton.

In the absence of the president the meeting was called to order by First Vice-president William T. Davis.

About thirty-eight persons were present.

On motion the reading of the minutes of the meeting of January 15, 1910, was dispensed with.

President Howard R. Bayne arrived and took the chair.

The president announced that a movement had recently been started by the Bar Association of the county looking to the transfer of the supreme court from Richmond to St. George, and that the quarters now occupied by the Association of Arts and Sciences might be selected for court purposes, in which event the Association might have to vacate and seek quarters elsewhere.

Voted: that in the event of the Association being forced to vacate its present quarters in Borough Hall the Board of Trustees be requested to act in the matter so as to safeguard the interests of the Association in such manner as it might deem advisable.

The curator-in-chief called attention to the Robert P. Dow collection of butterflies, recently accessioned and now on exhibition in the museum; also to a \$1000 six per cent. bond of the Confederate States of America, with all of the coupons attached, loaned for exhibition by Mr. David M. Van Name.

SCIENTIFIC PROGRAM

The program was in charge of the Section of Biology and consisted of addresses illustrated by lantern slides under the management of Mr. Charles A. Ingalls, viz.:

A Naturalist in North Carolina, by Mr. Charles L. Pollard, describing a trip to various parts of the state during parts of the months of July and August; and Two Seasons' Photographic Work with Sandpipers at Wolfe's Pond, by Mr. Howard H. Cleaves, describing the methods employed in securing snapshot photographs of the birds under various conditions (printed in full in this issue, p. 55).

The meeting then adjourned.

REGULAR MEETING, MARCH 19, 1910

The meeting was held in the museum, Borough Hall, New Brighton.

President Howard R. Bayne in the chair.

About sixty-five persons were present.

The minutes of the meetings of January 15 and February 19, 1910, were read and approved.

The president announced that the Board of Trustees had discussed the conditions confronting the Association and that he had introduced in the

State Senate, and Mr. William Allaire Shortt in the Assembly, a bill amending the charter of the Association, and authorizing the City to condemn or lease property for the uses of the Association and to provide means for the care and maintenance of the same.

SCIENTIFIC PROGRAM

Mr. Alanson Skinner gave an address, illustrated by stereopticon slides under the management of Mr. Charles A. Ingalls, entitled *By Canoe to Hudson Bay*, describing a trip made under the auspices of the American Museum of Natural History for the purpose of studying the Indians of the region.

The meeting then adjourned.

REGULAR MEETING, APRIL 16, 1910

The meeting was held in the museum, Borough Hall, New Brighton. President Howard R. Bayne in the chair.

Eleven persons were present.

In the absence of the secretary Mr. Charles L. Pollard was elected secretary *pro tem*.

The minutes of the meeting of March 19, 1910, were read and approved.

The president announced that the bill amending the charter of the Association had passed the Senate and would probably be acted upon by the Assembly during the coming week.

Mr. William T. Davis read a communication addressed to the secretary, from Mrs. A. M. King, suggesting that the Association endeavor to assist in promoting the passage of an amendment to the Forest, Fish and Game Law of the state, now pending in the Legislature, making it unlawful to sell the plumage of protected birds whether taken within the limits of the state or not.

Mr. Davis stated that the matter had been presented before and discussed by the Section of Biology at its previous meeting and that he had been requested to recommend that the Association approve the proposed amendment.

Voted: that the Staten Island Association of Arts and Sciences heartily approves of the proposed amendment to the State game laws looking to the better protection of wild birds, and requests Senator Howard R. Bayne and Assemblyman William Allaire Shortt to make every effort to secure the passage of the same.

The president stated that he was in favor of the amendment and would do what he could to facilitate its passage by the Legislature.

Mr. Davis read the draft of a circular which he had prepared at the request of the Section of Biology, calling attention to the destruction of the woodlands of the island by fire, and urging the coöperation of citizens in an effort to protect and preserve the small remaining areas. (Printed in full in this issue, p. 68.)

Voted: that the circular be approved and referred to the executive committee for such action as it might deem advisable in order to carry into effect the intent of the same.

The subject of free planting on the highways of the island was discussed informally, and it was

Voted: that the president be requested to appoint a committee of three to consider and report on the subject.

The president appointed Mr. William T. Davis, Mr. Charles L. Pollard, and Mr. W. W. Bryan.

The curator-in-chief exhibited a mounted photogravure portrait of Charles Darwin, issued by the New York Academy of Sciences, and stated that he was desirous of acquiring for the museum a series of portraits of prominent scientists and artists.

SCIENTIFIC PROGRAM

The secretary *pro tem.* read a paper by Dr. Arthur Hollick, illustrated by herbarium specimens, on Notes on Some Introduced Plants Collected near Arlington, Staten Island. (Printed in full in this issue, p. 62.)

Mr. William T. Davis read a paper on An Addition to the List of Staten Island Frogs. (Printed in full in this issue, p. 66.)

Mr. Davis also exhibited three hammerstones from Teaneck and elsewhere in New Jersey, calling particular attention to one that was wedge-shaped.

Mr. Howard H. Cleaves gave an account of his experiences in photographing kingfishers, *Ceryle alcyon* (Linn.), on the island during the previous summer.

The meeting then adjourned.

ANNUAL MEETING, MAY 21, 1910

The meeting was held in the museum, Borough Hall, New Brighton.

In the absence of the president the meeting was called to order by Second Vice-president William H. Mitchill.

Twenty-two persons were present.

The minutes of the meeting of April 16, 1910, were read and approved.

President Howard R. Bayne arrived and took the chair.

The annual report of the Board of Trustees, including reports of the standing committees and sections, was read and ordered placed on file. (See pp. 88-107 of this issue.)

The annual report of the secretary was read and ordered placed on file.

The annual report of the treasurer was read and ordered placed on file.

The president stated that the next order of business was the election of five trustees to fill the vacancies caused by the expiration of the terms of office of Samuel McKee Smith, Stafford Clarence Edwards, John De Morgan, William Armour Johnston, and Samuel Alexander Henszey, and called for the report of the committee on nominations.

The committee submitted, as nominees, the names of Stafford Clarence Edwards, John DeMorgan, William Goodenow Willcox, John Quincy Adams, and James Richard Walsh.

The president asked if there were any other nominations and none others being made, the secretary, on motion, was instructed to cast one affirmative ballot for the nominees submitted by the committee.

The secretary cast the ballot as instructed and the president declared the nominees elected trustees of the Association for the ensuing three years.

Dr. Arthur Hollick referred to the recent death of Mr. Walter C. Kerr and submitted the following memorandum for incorporation in the minutes of the meeting:

It is with a sense of great personal loss that the Staten Island Association of Arts and Sciences records the death, on May 8, 1910, of Walter Craig Kerr, M.E., who was elected to active membership in the Natural Science Association of Staten Island on March 12, 1892, and who served it faithfully as president from 1892 to 1900. He was also a member of the first board of trustees of the Staten Island Association of Arts and Sciences, in 1905, and his subsequent interest in our welfare was evidenced on several occasions when his advice and financial assistance were sought.

Our younger members will never know and can never realize the extent of his influence, not only in the development of our present Association but also in the preservation of its predecessor from threatened dissolution at the most critical period in its history, and it is in this latter connection especially that we should remember him with gratitude.

At the time of his first election as president of the Natural Science Association the conditions were serious and the prospects discouraging. The members as well as the public had apparently lost all interest in the object and aims of the Association. Attendance at the meetings had dwindled to almost nothing. The roll of membership contained only thirty-six names, and the entire burden of administrative work, as well as of scientific activity, was borne by some three or four members. The influence of his virile personality, however, soon made itself felt. The few who had remained active were encouraged to continue, and others were inspired with new interest. The result was that when he retired from the presidency, after seven years of service, the membership had more than doubled, the meetings were well attended, and the Association held an assured position as an important factor in the intellectual life of the community.

His attainments along the lines of his life work as a successful electrical engineer we need not dwell upon. They are recognized and have been recorded elsewhere, together with the customary formal expressions and resolutions of regret and condolence by those who were more intimately associated with him socially and in business. It remains for us to merely place upon record this brief testimonial of our appreciation of what he accomplished for this Association.

On motion the secretary was instructed to enter the memorandum in full in the minutes of the meeting.

The president then delivered his annual address.

SCIENTIFIC PROGRAM

Mr. Howard H. Cleaves gave an address on Wild Bird Photography as a Recreation, illustrated by lantern slides under the management of Mr. Charles A. Ingalls.

The meeting then adjourned.

Annual Reports

ANNUAL REPORT OF THE BOARD OF TRUSTEES

The Board of Trustees, with the coöperation of the several standing committees, the officers of the Association, and the members of the museum staff, administered the routine and other business affairs of the Association, the details of which are set forth in the appended and accompanying reports.

A change in the ex-officio membership of the Board was occasioned by the retirement of Darwin Long Bardwell from the position of District Superintendent of Schools in the Borough of Richmond, and the appointment of William Louis Ettinger to the position.

The Board held six meetings, as follows: the annual meeting on May 22, 1909; stated meetings on October 9, 1909, January 8 and April 2, 1910; and special meetings on December 16, 1909, and February 26, 1910.

At the annual meeting officers of the Association were elected as follows: president, Howard Randolph Bayne, first vice-president, William Thompson Davis, second vice-president, William Hinman Mitchell, treasurer, Charles Arthur Ingalls, secretary, Arthur Hollick.

At the stated April meeting Robert Percy Dow, B.A., was elected to patronship in the Association, in recognition of his donation of specimens to the museum collections amounting in value to more than \$200.

From time to time during the year the following nominees for active membership were elected: Edward L. Andrews, Mrs. Gilbert S. Barnes, Edward W. Brown, Mrs. Charles P. Benedict, Malcolm J. Cameron, Brandish J. Carroll, Mrs. Adolph L. King, Michael H. Lucey, Pietro Maerzen, Miss Marie C. Saxer, Roland J. Türpisch, Mrs. Jere V. Wright.

The Board records with regret the loss by death of the following active members: Joseph J. Barth, Edward L. Bogert, Lester W. Clark, Jr., David H. Gildersleeve, John F. Gould, Algernon K. Johnston, Walter C. Kerr, David F. Simonson, John M. Tilley.

Cordial and satisfactory relations with the municipal authorities have been continued. Application was made to the Board of Estimate and Apportionment for an appropriation of \$4000.00 for the care, maintenance, and equipment of the museum and library. The application was approved and the amount asked for was included in the city budget for the year 1910. (See item 1359, p. 13, 964, *City Record*, December 7, 1909.) This appropriation became available on January 1, 1910, and it assures the continued usefulness of the museum and library to the public, and the care and maintenance of the collections, during the current year.

During the winter an unexpected condition arose, by reason of a move-

ment by the Bar Association of the county to have the supreme court transferred from Richmond to St. George. This movement involved the possibility that our quarters in Borough Hall might be selected for court purposes, in which event we would probably be required to vacate. In anticipation of such a contingency, and in order that the city might have the necessary legal authority to provide quarters for us elsewhere, a bill amending our charter in this respect was introduced in the State Legislature. It passed both branches, was accepted by the city, signed by the governor on May 5 and is now Chapter 208 of the Laws of 1910. The full text of the act is as follows:

AN ACT to amend chapter five hundred and twenty-six of the laws of nineteen hundred and five, entitled "An act to incorporate the Staten Island association of arts and sciences and to provide for the care and housing of its museum and library by the city of New York," in relation to the acquisition and leasing of lands and buildings for said museum, and to provide funds by the city of New York therefor.

Became a law May 5, 1910, with the approval of the Governor. Passed, three-fifths being present.

Accepted by the City.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

Section 1. Section seven of chapter five hundred and twenty-six of the laws of nineteen hundred and five, entitled "An act to incorporate the Staten Island association of arts and sciences and to provide for the care and housing of its museum and library by the city of New York," is hereby amended to read as follows:

§ 7. The commissioners of the sinking fund of the city of New York may authorize the president of the borough of Richmond to provide such room or rooms in the borough building, in the borough of Richmond, city of New York, as may not otherwise be in use, and they may otherwise provide and set apart land in said borough for the erection of a suitable building or buildings thereon, for the keeping and maintaining of the museum, collection and library of the Staten Island association of arts and sciences, subject to all the conditions in section two hundred and seventeen, chapter four hundred and forty-six of the laws of nineteen hundred and one, and for the purpose of providing means for the erection of said building or buildings and for the purpose of acquiring land and a building or buildings thereon, it shall be the duty of the comptroller of the city of New York, upon being authorized thereto by the board of estimate and apportionment, to issue and sell corporate stock of the city of New York, in the manner now provided by law, sufficient for the same; and the board of estimate and apportionment may include in the annual budget for the purpose of leasing land and the building or buildings thereon and for the maintenance and care of said museum, collection and library of the Staten Island association of arts and sciences a sum suffi-

cient therefor, and the board of trustees of the said Staten Island association of arts and sciences are empowered to enter into a contract with the proper officials of the city of New York, looking to the leasing of such rooms and building or buildings, and the care of its museum, collection and library as herein provided.

§ 2. This act shall take effect immediately.

STATE OF NEW YORK, }
Office of the Secretary of State. } ss.:

I have compared the preceding with the original law on file in this office, and do hereby certify that the same is a correct transcript therefrom and of the whole of said original law.

SAMUEL S. KOENIG,
Secretary of State.

No change was made in the general policy of museum administration adopted last year, which was found to be as satisfactory as was possible under the circumstances and conditions controlling our present position. The museum and library was kept open to the public all day on Saturdays and during the afternoons of every other week day except Monday, which day each week was reserved for necessary work on the collections.

The specimens on display were changed from time to time in many of the cases, and on certain occasions special exhibits were installed. Especially worthy of note were the Hudson-Fulton celebration exhibit and those by the art loan committee of the Section of Art.

The Board takes advantage of this opportunity to commend the work accomplished through the medium of the sections now organized, and to urge upon the members of the Association the desirability of enrolling and joining in their activities, or of organizing new sections according as interest in special subjects may seem to warrant such action. The success attained by the Section of Art and the Section of Biology, in providing the instructive exhibits and illustrated lectures which were so thoroughly enjoyed by all, has demonstrated that this feature of the Association should be further extended so as to include all of our members who may wish to take an active part in the work of the Association. Reports of the sections will be presented this evening, from which the details of their organizations and activities may be learned.

The scheme of conducting a course of public entertainments similar to those of last year received the approval of the Board and was placed in charge of a special committee of which Mr. Samuel McK. Smith was appointed chairman. As finally arranged and carried out, the course included a concert by the Olive Mead Quartette on November 5, readings by Mrs. Bertha Kunz Baker on November 22, and a violin and piano recital by Mr. and Mrs. David Mannes on December 10. It is to be regretted that the course was not the financial success that its high class character deserved.

The Board tenders its congratulations to the Association on the broader interest shown in its work and activities by the members in general, as evidenced in the increased attendance at the monthly meetings, in the larger number who have contributed specimens, notes, and more lengthy communications, and in the greater diversity of subjects included in both the informal programs and those arranged by the several sections.

The Association is also to be congratulated on its improved financial condition and on the practical certainty that during the coming year the debt necessarily incurred during the period of transition into a public institution will be entirely wiped out.

Respectfully submitted for the Board,

ARTHUR HOLLICK,
Secretary.

ANNUAL REPORT OF THE EXECUTIVE COMMITTEE

The executive committee held four meetings and transacted all emergency and other *ad interim* business between the meetings of the Board.

The several items of business transacted were recorded in the minutes of the committee and were subsequently reported to and approved by the Board.

ARTHUR HOLLICK,
Secretary.

ANNUAL REPORT OF THE AUDITING COMMITTEE

The committee examined the books and accounts and audited the annual and quarterly reports of the treasurer, dated respectively May 15, 1909, October 9, 1909, January 8, 1910, and April 2, 1910, to each of which we have attached our certificate of audit.

In this connection we wish to offer a suggestion to govern the future audits, viz., that these should be made once a year and should cover the transactions embraced in the treasurer's annual report of that year, the audit (if possible) to be made before the same is presented to the Association at its annual meeting.

The present plan of auditing each quarterly statement is rather difficult for the auditors to arrange, and adds unnecessarily, we think, to the already considerable labors of the treasurer, to whose painstaking care and faithfulness to the Association's interests we are pleased to testify.

T. LIVINGSTONE KENNEDY, *Chairman,*
WINFIELD R. KOLLER.

ANNUAL REPORT OF THE PUBLICATION COMMITTEE

The Museum Bulletin, edited by the Curator-in-chief, has been issued each month, including No. 11, June 1909-No. 22, May 1910.

Part II, Volume II, of the PROCEEDINGS (February-May, 1908, inclusive) was issued September 30, 1909.

Copy for parts III and IV (July 1908-May 1909, inclusive) has been in the hands of the printer since March 22. Previous to that time the manuscript was withheld on account of financial reasons. Hence these parts are much behind time. A communication has been transmitted to the printers urging that the matter receive immediate attention, and it is hoped that during the coming year the improved financial condition of the Association will enable us once more to bring the publication of the PROCEEDINGS up to date.

PHILIP DOWELL, *Chairman*,
WILLIAM T. DAVIS,
ARTHUR HOLLICK.

ANNUAL REPORT OF THE CURATOR-IN-CHIEF

TO THE BOARD OF TRUSTEES,

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES.

Gentlemen: I have the honor to submit herewith my third annual report as Curator-in-chief, for the fiscal year ending May 21, 1910.

The museum during this period has made progress in several different directions. From the experience gained by observation of the needs of our public it has been possible to strengthen and permanently establish certain activities that were undertaken experimentally in the first year of the museum's existence. Other lines of effort have been discontinued temporarily until better opportunities for their development shall be afforded. It has been our constant endeavor to keep in touch with the opinions expressed by visitors to the museum, and to formulate a policy, in relation to exhibits, that will be of the greatest benefit to the greatest number. On account of the closer familiarity with the museum gained during the year by members of the Association, the staff has frequently profited by their advice and counsel.

The acquisition of new material, both for the study and exhibition series, has continued to a gratifying degree. A large proportion of the accessions have naturally been direct gifts to the museum; but many exchanges have been made with other institutions, and some of our most valued specimens have been received in this way. Certain collections made by members of the museum staff have been important both in filling gaps in the series and in providing us with duplicates for exchange.

With the alteration in exhibits which has been necessary from time to time in order to meet social requirements or to stimulate public interest, there has been steady progress toward a proper separation of the various departments and an equable assignment of space to each. Owing to the limited space we are often obliged to feature the exhibits of one class to the exclusion of others; but an effort is constantly made to preserve a

just balance by following one of these special displays with another of a different character.

The attendance record shows a total of 4992, as against 3597 last year. This does not include the attendance at lectures or other special events in the museum. The rate of increase over the first year in which the museum was open is especially gratifying when we reflect that a considerable proportion of our own members have not as yet visited the museum, and that a goodly portion of the community has failed to grasp the idea that there is such an institution on our island. This indicates that the growth in attendance will continue, especially after we are enabled to move into more accessible quarters.

The only change in the museum staff during the year was the appointment by the Board of Dr. John Quincy Adams as honorary curator of the department of Arts and Antiquities. The committee on exhibits of the Section of Art is continued under his supervision.

Museum Exhibits

A large portion of the summer months in 1909 were devoted to preparations for the special Hudson-Fulton exhibit, which opened with appropriate exercises on September 4 and closed on October 31. The particular features of the exhibit were described in the local press and in the Museum Bulletin for September 1909 (No. 14). It consisted of a synoptic presentation of the original resources of the island and the salient points of its history, and was greatly enhanced in interest and value by the numerous loans tendered by members and friends of the Association. The attendance during September was far in excess of that recorded in any previous month, and amply justified the time and labor required in preparing for the exhibit.

The art loan exhibits greatly surpassed those of the previous year in value and interest. In May a collection of old china, consisting principally of Lowestoft, but including various other wares, was installed. This remained throughout the summer, and was succeeded in November by a remarkable collection of old prints and engravings and by a number of modern prints and pastels by Charles F. W. Mielatz and Joseph Pennell. The facilities for displaying these pictures were not satisfactory, and the exhibit did not attract the widespread notice that it deserved. Some rare old Japanese prints were loaned at about the same time by Messrs. Bolton C. Brown and Fred L. Stoddard, through the courtesy of Mrs. J. Q. Adams. In December the china was replaced by old Sheffield silver and old cut glass, which presented an especially fine effect in the new case built after a design obtained from the Metropolitan Museum of Art. In March a large collection of old samplers, chiefly from Mr. George A. Plimpton and from the Teachers' College, likewise obtained by Mrs. Adams, was displayed for a month. The present exhibits of the Art Department include a case of Wedgwood china and a number of cases of old laces and embroideries.

I wish to take this opportunity of expressing my great indebtedness to the ladies of the committee on exhibits of the Section of Art, who have so earnestly worked to make these loan exhibits attractive, and have assumed the entire responsibility of packing, transporting, and arranging the material. There is no doubt that such objects possess an educational value even to those who are unconscious of the fact; and they are of still greater importance in fostering the recollection of many arts and crafts that have deteriorated or fallen into disuse.

Mention should be made of the special biological exhibit commemorative of the Darwin anniversary in November, consisting of cases of insects illustrating variation, protective mimicry, protective resemblance and tautopsis. A portion of this has been continued as a permanent exhibit.

The reptiles of the Myers collection, purchased by the Association two years ago, are now being placed on view as rapidly as they can be transferred to exhibition jars. The collection of exotic butterflies has also been considerably augmented during the year. A number of new exhibits, which had been planned and for which we have material on hand, must await additional case room.

Accessions

In the Department of Zoology the most extensive contributions have been to the insect collections, chiefly as a result of the exchanges effected from time to time with my colleagues in other museums. The Dow patronship gift of exotic Lepidoptera, the North Carolina specimens collected by myself for the museum, and the Noctuidae presented by Professor John B. Smith are the most notable among this class of accessions.

Our collection of shells, already a large and valuable one, has been further increased by the gift of Mrs. Charles Townsend of a number of tropical species. Dr. Dowell has contributed some interesting local mammals and batrachians.

In the Department of Botany the general herbarium has been enriched by the gift of an extensive collection of violets from the eastern and southern United States by Professor H. D. House, while the local herbarium has received a number of Staten Island specimens, some of these representing additions to the flora.

Dr. Arthur Hollick, the honorary curator of geology, has continued his contributions of local geological material. In the Department of Anthropology the principal acquisition during the year was a collection of Indian implements from Ohio, presented by Mr. F. M. Ho-glen.

The Department of Arts and Antiquities has received among other accessions, another series of Mr. Tuttle's photographs of historic maps, including the famous Verrazano map.

The library accessions have been largely books and pamphlets received in exchange for our PROCEEDINGS, but a number of valuable state publications have been sent to us through the good offices of Senator Bayne.

We are also receiving, as issued, the topographic maps of Staten Island, through the courtesy of Borough President Cromwell.

The following is a tabulated list of accessions:

Accessions to the Museum and Library during 1909-1910

Department of Zoology		
Insects	4030	
Shells	1463	
Other invertebrates	226	
Reptiles and batrachians	12	
Birds, nests, and eggs	50	
Miscellaneous	81	
	5871	5871
Department of Botany	1097	
Department of Geology and Mineralogy	66	
Department of Arts and Antiquities	37	
Department of Archeology and Anthropology	75	
Department of Books and Maps	192	
Miscellaneous	32	
Total number of specimens received	7370	

Total number of accessions 92, of which 63 represent gifts, 23 exchanges, and 6 were collected especially for the museum.

Museum Staff

The curator-in-chief has been very fully occupied during the year with administrative and routine duties, mounting and caring for specimens, planning and arranging the exhibits, etc. During the summer a number of days were spent in the field collecting material in various groups, and for a period of four weeks, in July and August, under authorization from the Board, the curator-in-chief made a collecting tour in North Carolina.

The museum assistant, in addition to her clerical duties in addressing envelopes and writing letters and labels, etc., and the routine work of entering and filing periodicals and supervising the museum during public hours, has been engaged on the museum catalog, which has made excellent progress.

Mr. William T. Davis, honorary curator of zoology, prepared the cases of native insects for the special Hudson-Fulton exhibit. His assistant, Mr. James Chapin, is still in Africa, engaged in field work for the American Museum.

Dr. Philip Dowell, honorary curator in botany, made a study of the violets in the herbarium, in connection with an extensive study of the genus published in the April issue of the Bulletin of the Torrey Botanical Club.

Dr. Arthur Hollick, honorary curator of geology, mineralogy, and paleontology, has continued his rearrangement of the mineral collection and has made some changes in the exhibition series.

Dr. J. Q. Adams, honorary curator of arts and antiquities, has not, since his recent appointment, found opportunity to reorganize the department. He has secured for the Association, however, the privilege of hearing two important lectures on art topics by speakers of wide reputation.

Mr. Alanson Skinner, honorary assistant in archeology and ethnology, has visited the museum from time to time, identifying material and giving information for the preparation of labels. He lectured before the Association at the March meeting on the subject *By Canoe to Hudson Bay*.

Museum Catalog

A museum catalog is an indispensable adjunct of every public museum. It bears the same relationship to the accession record as the ledger to the daybook in commercial houses, and its object is to furnish a complete list of every specimen in the possession of the Association. Our catalog conforms to the system followed in many other museums; it consists of two series, the specimen and the species catalog. In the first, differently colored cards are used to indicate the various departments, salmon color being used for zoology, green for botany, blue for geology, yellow for archeology, and buff for arts and antiquities. Each department has its own series of numbers, distinguished by a prefixed letter. Whenever a specimen is added to the collections it is given the next consecutive number in its department; and on the corresponding card is written the name of the species or description of the object, its accession number, date and locality, collector, and any further remarks that may be necessary. The highest number will therefore always indicate the total of specimens belonging to that particular class; and whenever information is desired concerning any particular specimen in the museum, reference can be quickly made to its number in the chronological series.

The other division of the catalog consists of white cards, with the names of species at the top, and below this a list of all the specimens belonging to that species, with their museum numbers. These cards are alphabetically arranged, with copious cross references, and their use is to show what the museum possesses in any given class of objects. There is also an alphabetical donor catalog for convenience of reference.

During the past year the following cards were added to the various catalogs:

Zoology	289	Representing 311 specimens.
Geology and Mineralogy	2343	Representing 4025 + "
Anthropology and Archeology....	143	Representing 147 "
Donor catalog	193	Total 4483 + "
Species catalog	565	
Miscellaneous cards	63	
Total cards written	3596	

At the present time the catalog in archeology has been brought up to date; that in zoology is complete except for the insects; and the geological catalog is well under way.

Library

Our library now receives in exchange for the PROCEEDINGS 107 different serial publications, representing 67 institutions. The necessity for having the completed volumes bound is a constantly increasing one, as unbound pamphlets and brochures are easily misplaced and are irreparably damaged by frequent handling. It is also important that we should obtain a number of standard textbooks for use in studying and labeling the collections. At the present time our work is seriously hampered by this lack, and in certain directions would be impossible if books were not kindly loaned from private libraries. A gift of money for binding or for the purchase of textbooks would be one of the most practical ways of helping the museum.

In addition to the periodicals received in exchange the Association subscribes to the American Naturalist and to Psyche; it receives as gifts from Dr. Arthur Hollick, Science, the Monthly Bulletin of the New York State Department of Health, and the Staten Islander; from Mr. William T. Davis the Entomological News; from Mr. Charles L. Pollard the Publishers' Weekly, the Journal of the New York Entomological Society, and the Columbia Alumni News; and from Mr. Ira K. Morris The Broadside.

General Remarks

From an inspection of the accession record for the past year it may be predicted that the museum is no longer in danger of suffering from a lack of donations. On the other hand, we have reached a point where careful discrimination is necessary in accepting material unsuitable either for study or exhibition, as our limited space can be easily filled by objects, which though not necessarily valueless are not adapted to our local needs and scope. Theoretically the accessions committee acts as a buffer between the museum and material offered to it; but practically, nearly all of the dubious accessions come to us under circumstances which render it unwise or impossible to decline them. There is much to be said, therefore, in favor of the general practice among other museums, whereby gifts of every description are received, but on the express understanding that the executive in charge is free to dispose of them as he deems fitting. There is room for a considerable increase in our activities with regard to exchanges, and this is really one of the most effective means of increasing the collections, since all the material received undergoes a selective process at the hands of a trained official. It has been my constant endeavor, when meeting my colleagues in other institutions, to arrange an exchange of specimens whenever such action might prove mutually advantageous. It

is in this way that the insect collection has grown in two years from practically nothing to a total of nearly 8000 specimens.

But neither gifts nor exchanges obviate the necessity for the occasional purchase of material, and one of the greatest needs of the museum is a fund that shall be devoted exclusively to this purpose. In preparing special exhibits the lack of a single specimen to complete a given series is often fatal to the success of the exhibit; and frequently the only way to obtain such a specimen is to buy it. Likewise we can only hope to complete some of our local collections by the purchase of specimens to represent species now extinct in this vicinity.

Respectfully submitted,

CHARLES LOUIS POLLARD,
Curator-in-chief.

RECORD OF ATTENDANCE FROM MAY 18, 1909, TO MAY 21, 1910

Month	Open days	Number of Visitors	Average per day
May 18-29, 1909.....	10	96	
June, 1909.....	22	258	11
July, 1909.....	23	197	9
August, 1909.....	21	289	14
September, 1909.....	21	915	44
October, 1909.....	21	669	32
November, 1909.....	19	418	22
December, 1909.....	22	457	21
January, 1910.....	20	346	16
February, 1910.....	18	357	20
March, 1910.....	23	483	21
April, 1910.....	22	305	14
May 1-21, 1910.....	15	202	
	257	4992	

Average per month for year 416

Average per day for year 19

Special Occasions

Borough President's reception, May 25, 1909.....	14
Section of Art reception, December 27, 1909.....	100
Bristow Adams' lecture, March 12, 1910.....	90
R. T. H. Halsey's lecture, April 23, 1910.....	35

239

The highest attendance was on October 2, 1909, 157; the lowest on blizzard day, January 14, 1910, when for the first time since the museum was opened, no visitors were recorded.

No special record has been kept of visits of teachers with their classes, but at least 10 such visits have been made; one teacher, from school 34, at Fort Wadsworth, having made three trips to the museum, bringing different children each time.

LIST OF CONTRIBUTORS TO THE MUSEUM AND LIBRARY DURING 1909-1910

Adams, J. Q.	Hillyer, Jack
Aubrey, Harold	Ho-glen, F. M.
Bardwell, Darwin L.	Hollick, Arthur
Bayne, Howard R.	House, H. D.
Benedict, Charles P.	Hunt, Frederick F.
Beutenmüller, William	Janet, Charles
Brick, Samuel, Jr.	Joutel, L. H.
Bryan, W. W.	Langdon, Arthur N.
Comstock, W. P.	Leng, Charles W.
Cromwell, George	Low, Mrs. Edward A.
Davis, William T.	Ludlum, William
Delavan, Edward C., Jr.	Lynd, Miss Margaret Louise
Doll, Jacob	Maerzen, Pietro
Dowell, Philip	Mayer, Walter S.
Dow, R. P.	Mitchell, C. C.
Duggett, Francis W.	Museum, Brooklyn Institute
Engelhardt, George P.	Olsen, C. E.
Findlay, Mrs. John	O'Neill, Lambert, Jr.
Hallinan, Thomas	Pollard, Charles Louis
Hillyer, J. Blake	Rader, John
Schaefer, Charles	U. S. National Museum
Sleight, Charles E.	Van Name, D. M.
Smith, John B.	Vreeland, James
Smith, Sanderson	Watson, Frank
State Department, Washington, D. C.	Wheat, Silas G.
Theler, Miss	Wilkinson, Mrs. M. J.
Townsend, Mrs. C. E.	Wilson, Percy
Tribus, Louis L.	Willcox, Mrs. W. G.
Tuttle, George W.	

Total number of contributors 57

PUBLICATIONS ARE RECEIVED IN EXCHANGE FROM THE FOLLOWING INSTITUTIONS:

New York City

Bronx Society of Arts and Sciences	New York Academy of Sciences
Central Museum of the Brooklyn	New York Botanical Garden
Institute of Arts and Sciences	New York Public Library
Columbia University	Torrey Botanical Club

United States

California

California Academy of Sciences
University of California

Colorado

Colorado College Library
Colorado Scientific Society

100 STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

Connecticut	Montana
Connecticut State Library	University of Montana
District of Columbia	North Carolina
Smithsonian Institution	Elisha Mitchell Scientific Society
U. S. Department of Agriculture.	New York
U. S. Geological Survey	Rochester Academy of Science
Illinois	University of the State of New York
Augustana College and Theological Seminary	Ohio
Chicago Academy of Sciences	Cincinnati Society of Natural History
Field Museum	Geological Survey of Ohio
University of Illinois	Lloyd Library
Iowa	Ohio State Archeological and Historical Society
Davenport Academy of Sciences	Wilson Ornithological Club
Kansas	Pennsylvania
Kansas Academy of Science	Academy of Natural Science of Philadelphia
University of Kansas	Pennsylvania Department of Agriculture
Massachusetts	Pennsylvania Museum and School of Industrial Art
American Academy of Arts and Sciences	Warren Academy of Sciences
Boston Society of Natural History	Rhode Island
Tufts College	Roger Williams Park Museum
Michigan	Vermont
University Museum, Michigan Academy of Science	University of Vermont
Minnesota	Wisconsin
St. Paul Institute of Arts and Sciences	Public Museum of the City of Milwaukee
Missouri	Wisconsin Academy of Sciences, Arts and Letters
Academy of Science of St. Louis	
Missouri Botanical Garden	
Public Library of St. Louis	
University of Missouri	
<i>Foreign</i>	
Bohemia	Costa Rica
Societas Entomologica Bohemiae	Museo Nacional
Brazil	Finland
Sociedade Scientifica de Paulo	Societas pro Fauna et Flora Fennica

Germany	Sweden
Kaiserlichen Leopoldinisch-Carolin- schen Akademie der Naturfor- scher	Royal University
Oberhessischen Gesellschaft für Natur und Heilkunde	Uruguay
	Museo Nacional de Montevideo
Ireland	Canada
Belfast Naturalists' Field Club	Canadian Entomologist
	Geological Survey of Canada
Japan	McGill University
Sapporo Natural History Society	Ottawa Field Naturalists' Club
	Historical and Scientific Society of Manitoba
Mexico	Natural History Society of New Brunswick
Instituto Geologico de Mexico	Nova Scotia Institute of Science
Scotland	
Natural History Society of Glasgow	

Total number of institutions sending exchanges..... 67

Total number of publications received..... 107

PUBLICATIONS ARE RECEIVED AS GIFTS FROM THE FOLLOWING PERSONS:

William T. Davis	Ira K. Morris
Arthur Hollick	Charles Louis Pollard
Total number of gifts of publications..... 8	

PUBLICATIONS ARE DEPOSITED AS LOANS BY THE FOLLOWING:

Charles Louis Pollard
Total number of publications lent..... 3

THE PROCEEDINGS OF THE ASSOCIATION ARE SUBSCRIBED FOR BY THE FOLLOWING INSTITUTIONS:

Gray Herbarium of Harvard Uni- versity	New Hampshire State Library, Concord, N. H.
John Crerar Library of Chicago, Ill.	
Total number of subscribers 3	

NEW EXCHANGES WERE ADDED TO THE LIST DURING 1909-1910, AS FOLLOWS:

Connecticut State Library, Hartford, Conn.
 New York Public Library, New York City
 Pennsylvania Department of Agriculture, Division of Zoology, Harris-
 burg, Pa.

102 STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

Pennsylvania Museum and School of Industrial Art, Philadelphia, Pa.

Provincial Museum, Victoria, B. C.

University of Illinois, Urbana, Ill.

Warren Academy of Sciences, Warren, Pa.

Total number of new exchanges added..... 7

LOAN EXHIBITS DURING 1909-1910

Date of instalation		
May,	1909.	Exhibit of old china, chiefly Lowestoft, obtained through committee on exhibits, Section of Art.
September,	1909.	Exhibit of old engravings appropriate to Hudson-Fulton celebration, lent by Gerald F. Shepard.
November,	1909.	Exhibit of Mielatz and Pennell drawings, lent by the artists; and of old prints and engravings, lent by Mr. Whittle, of the Century Co., Rev. George C. Lenington, Mrs. Drury, Mr. W. T. Davis, Mrs. George R. Boynton, and Mr. F. L. Stoddard, all obtained through Miss Lucy J. Kipper.
December,	1909.	Exhibit of old Japanese color prints, lent by Mr. Bolton C. Brown and Mr. F. L. Stoddard, obtained through Dr. J. Q. Adams.
December,	1909.	Exhibit of old Sheffield plate, silver, and cut glass, obtained through committee on exhibits, Section of Art.
March,	1910.	Exhibit of old samplers, lent by Mr. George Plimpton, Mrs. Everitt C. Macy, and the Teachers' College of Columbia University, obtained through Mrs. J. Q. Adams.
May,	1910.	Exhibit of Wedgwood, old laces and embroideries, obtained through committee on exhibits, Section of Art. Exhibit of old laces and embroideries, lent by Teachers' College and by Mrs. Oliver C. Bronson and Miss Sage, obtained through Mrs. J. Q. Adams.

Among individuals who lent articles to complete Hudson-Fulton exhibit were Miss S. Gertrude Clark, Mr. L. L. Tribus, and Mr. C. L. Pollard.

ANNUAL REPORT OF THE SECRETARY

Number of members and patrons on the roll at date of last annual report:

Active	337
Corresponding	4
Life	2
Honorary	2
Patrons	5

Since added:

Active	14	
Ex-officio.	1	
Patron	1	
		16
		366
Since resigned	16	
Since deceased	9	
Since dropped	7	
		32
		334

This includes 319 active, 4 corresponding, 2 life, and 2 honorary members, 1 ex-officio member, and 6 patrons.

ARTHUR HOLLICK,
Secretary.

ANNUAL REPORT OF THE TREASURER

Income

Balance in hand at date of last annual report.....	\$ 155.05
Since received:	
Dues	\$ 881.50
Subscriptions to PROCEEDINGS	31.30
Interest on life membership fund	4.08
City appropriation	4,333.30
	\$5,250.18
Total	\$5,405.23

Disbursements

Association account:

Loans paid	\$ 700.00
Sundry expenses	248.91
Printing PROCEEDINGS	155.90
Postage and stationery	50.50
Interest on loans	29.02
Administration (Secretary and Treasurer) ..	24.87
Subscriptions to periodicals	5.00
	\$1,215.10

City appropriation account:

Salaries	\$3,500.00
Supplies and equipment	517.26
	\$4,017.26
Total	\$5,232.36
Balance in hand	\$ 172.87

C. A. INGALLS,
Treasurer.

REPORT OF THE MUSEUM COMMITTEE

TO THE BOARD OF TRUSTEES,

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES.

Gentlemen: Your committee held a meeting on Saturday, December 4, 1909, at which time it was decided to remove certain books and objects not available for museum purposes to a place of storage offered without expense to the Association. This removal was later accomplished, and a list of the objects stored was made by the curator.

The other matters relating to the museum will be found in the report of the curator-in-chief.

WM. T. DAVIS,
Chairman.

REPORT OF THE COMMITTEE ON ACCESSIONS

TO THE STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES.

Gentlemen: Your committee on accessions offers the following report for the year 1909-1910.

The year just closing has been notable for the increasing interest shown in the museum as a place for the safer deposit and better display of a great variety of material.

The total number of gifts, not counting exchanges, is reckoned at 4,639, the number of donors 46.

Among the larger accessions were: Mr. R. P. Dow's gift of 1,151 specimens of exotic butterflies and moths, for which Mr. Dow was made a patron; 1,030 specimens of violets from Dr. H. D. House for the herbarium; about 1,500 shells and other objects from Mrs. C. W. Townsend; about 260 biological specimens from Mr. Wm. T. Davis; about 100 specimens each from Dr. Arthur Hollick and Mr. John B. Smith; and smaller but important gifts from Mr. F. M. Ho-glen, Dr. Philip Dowell, Mr. Geo. Cromwell, Mr. C. L. Pollard, and Mr. Sanderson Smith.

Three meetings of the committee were held: one each in December, February, and May.

S. MCK. SMITH,
Chairman.

REPORT OF THE WOMEN'S AUXILIARY COMMITTEE

TO THE BOARD OF TRUSTEES,

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES.

The activities of the women's auxiliary committee were confined to assisting the art loan committee of the Section of Art at the reception in the museum on December 27, 1909.

ADELINE A. T. HOLLICK,
Chairman.

REPORT OF THE SECTION OF BIOLOGY

A special meeting of the section was held October 20, 1909, to arrange for program at the following meeting of the Association on November 20.

The regular meeting of the Association on Saturday, November 20, was held under the auspices of the Section of Biology. The scientific program of this meeting consisted of addresses commemorating the one hundredth anniversary of the birth of Charles Darwin and the fiftieth anniversary of the publication of *The Origin of Species*. An account of the meeting is given in the Association minutes.

On March 12, 1910, a meeting of the section was held in the museum with an attendance of about 90, the special feature of the meeting being a lecture by Mr. Bristow S. Adams, of the U. S. Forest Service, on the topic *A Prodigal Nation*, illustrated by handsomely colored lantern slides.

The annual meeting was held on April 9.

The section has thus, during the past year, held four meetings, at each of which the prominent feature has been a scientific program.

Respectfully submitted,

PHILIP DOWELL,

Recorder.

May 18, 1910.

REPORT OF THE SECTION OF ART

TO THE BOARD OF TRUSTEES,

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES.

The Section of Art was formally organized on March 10, 1909. Prior to that, the art interests of the Association were looked after by a committee of twelve, known as the art committee of the Association. When the Section of Art came into being, this committee was dissolved, to be reappointed as the committee on exhibits, one of the two standing committees of the section.

When we remember its recent organization, it will be seen that the past year has been, practically, the freshman year of the Section of Art. The activities of the year may be summarized under three headings: Meetings, Excursions, and Loan Exhibits.

After Dr. J. Q. Adams assumed the chairmanship, a business meeting of the section was called for June 4. At this meeting the possibilities of usefulness open to the section were outlined by the chairman, and free discussion was invited. Various suggestions made at this meeting bore fruit later in the lectures given on art topics, and the excursions that were taken to places of artistic interest.

On December 18 the regular monthly meeting of the Association was in charge of the Section of Art. Through the courtesy of the chairman, the services of Lewis F. Pilcher, Professor of Fine Arts in Vassar College, were secured for this occasion. The program consisted of a lecture on the topic *Doric Architecture as Applied to the Subtreasury Building*, at Broadway and Nassau Streets, New York City.

106 STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

The lecture was preceded by a brief business meeting of the section.

Permission having been obtained from the trustees, invitations were sent out in the name of the art section for a private view, on December 27, of the loan collections then on view in the museum.

In arranging this function the ladies of the committee on exhibits were assisted by the women's auxiliary committee of the Association. The ladies in charge felt repaid for their exertions by the evident pleasure of their guests, most of whom were non-members of the Association, this being the class which the committee desired to interest.

The excursions taken by the section were the outcome of a suggestion made by Mrs. Adams. The first trip was made to City Hall in New York, under the guidance of Dr. Adams.

The decorations of the Governor's rooms and the historic portraits in the building were examined with extreme interest. A second trip to Manhattan was taken a week later, Mr. F. L. Stoddard conducting the party. The objects of this visit were Mr. Stoddard's beautiful wall decorations in the Hebrew Technical School for Girls, and Louis Tiffany's masterly altar piece in the Church of the Ascension.

Informal excursions were also taken by some members of the section to see the collection of Wedgwood at Duveen's gallery, and to visit the Dutch paintings and the colonial furniture exhibited at the Metropolitan Museum in connection with the Hudson-Fulton celebration.

The loan exhibits which our section has provided for the Staten Island Museum during the year have spoken eloquently for themselves.

Both work and responsibility are entailed in collecting and arranging objects of a fragile and valuable nature, and a special word of acknowledgment is due the committee on exhibits and the members of the section who have individually undertaken this task.

A detailed description of the loans is impossible within the limits of a report, but they may be briefly catalogued.

On May 25 the committee on exhibits installed a collection of old china, consisting largely of Lowestoft ware but including specimens of French, English, Russian, Chinese, and Indian porcelain. This exhibition caused much discussion among museum visitors concerning Chinese versus English Lowestoft, and incidentally encouraged investigation into the history of the manufacture of this debatable ware.

Mrs. Hunt earned the thanks of the committee by photographing this collection.

In November a large collection of prints and engravings was secured for the museum through the services of Miss L. J. Kipper. Part of this loan consisted of old engravings and etchings, one case being devoted to Hogarth prints. The modern part of this collection included eight pastel drawings by Joseph Pennell and thirty-three prints by Charles Mielatz, the subjects being characteristic scenes and buildings of New York.

This exhibit was followed by one of curious old Japanese prints, loaned by Messrs. Bolton C. Brown and F. L. Stoddard, and obtained for us by Dr. Adams.

In December the committee on exhibits was ready with a new loan of old silver, Sheffield plate, and cut glass of the eighteenth and early nineteenth centuries. A new case, built after a design in use in the Metropolitan Museum, came into effective service at this time, the glass interior enhancing the brilliancy of the objects placed upon its shelves.

In March a unique group of old samplers from the collection of Mr. George A. Plimpton was exhibited through the kind offices of Mrs. Adams. There were about sixty of these wonderful examples of patient stitchery, England, France, Germany, Italy, Spain, and Sicily being represented among the little embroiderers of bygone days.

The important work of the committee on exhibits has already been mentioned. Besides meeting frequently to discharge its practical duties, the committee has held delightful semisocial meetings at the homes of three of its members, Miss Clark, Mrs. Kennedy, and Mrs. Adams.

In concluding the year's record, it may be stated that the section has at present a membership of 26.

Two resignations from the executive board are to be regretted, that of Mrs. Hunt, vice-chairman of the section, and of Mrs. Kennedy, chairman of the committee on exhibits.

The immediate mission of the Section of Art may well be summed up in the felicitous phrase of an artist, a guest at our June meeting: "The work of this art section should be the conversion of the community to belief in the need of art for everyone."

LUCY J. KIPPER,
Recorder.

REPORT OF THE SECTION OF HISTORICAL RESEARCH

The Section of Historical Research, the formation of which was authorized by vote of the trustees last October, met for purposes of organization in the museum on May 18, 1910. Messrs. E. C. Delavan, Jr., Arthur Hollick, S. McK. Smith, Rev. Hobart Clark, and Charles L. Pollard in attendance. Mr. Delavan was elected temporary chairman, and Mr. Pollard temporary secretary. The chairman then stated the objects of the section, and after discussion the section balloted for permanent officers, Mr. Delavan being elected chairman and Mr. Smith recorder.

Upon motion the chair was authorized to appoint one member to serve with the chairman and the recorder as a committee to draft bylaws. He appointed Mr. Pollard as the third member.

Upon motion the section then adjourned subject to the call of the chair.

CHARLES LOUIS POLLARD,
Temporary Secretary

Proceedings of the Section of Biology

MARCH 12, 1910

The meeting was held in the museum. About 90 persons were in attendance.

The scientific program consisted of a lecture by Mr. Bristow S. Adams, of the Forest Service, United States Department of Agriculture, on the topic: A Prodigal Nation, freely illustrated by handsomely colored stereopticon illustrations. The speaker described the destruction of the forests and made an eloquent plea for their conservation.

APRIL 9, 1910

The meeting was held at the home of the chairman, Mr. Charles L. Pollard, New Brighton. William T. Davis was elected chairman and Philip Dowell was reelected as recorder.

A communication was read, in the form of a letter, regarding the desirability of securing better protection for our native birds. A discussion followed on the desirability of more general conservation of nature. The chairman was authorized to draft a circular in the interest of conservation to be printed and mailed, also a paster to warn against and discourage the burning of our forests.

Mr. Howard H. Cleaves exhibited photographs showing some views of forest fires in the vicinity of Oakwood, Staten Island, October 12, 1909; also a photograph showing the nesting place of a pair of redwing blackbirds. In connection with the last he read a note on the nesting habits of these birds, entitled The Redwing Changes Its Nesting Site. (Printed in full in this issue, p. 71.) He showed also some photographs of the white-breasted nuthatch.

Mr. Charles L. Pollard reported the acquisition by the museum of a specimen of the short-eared owl, *Asio accipitrinus*, from Fort Wadsworth, Staten Island.

Dr. Arthur Hollick showed herbarium specimens of plants collected in ballast ground near Arlington, Staten Island, some of which were new to the island flora.

Publications of the Association

1. PROCEEDINGS OF THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND

These PROCEEDINGS were printed in octavo numbers, partly in leaflet and partly in pamphlet form, from November 10, 1883, to June 3, 1905, and were included in nine volumes, separately indexed.

They may be obtained by members and patrons at \$1.25 per volume. To others the price per volume is \$2.50.

Single numbers of back volumes may be obtained at 10 cts. each, except the following, for which a uniform price of 50 cts. each will be charged:

Special No. 21, Vol. V, No. 5, March 14, 1896, "Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 56, and map by Chas. W. Leng.

Special No. 22, Vol. VII, No. 15, March 10, 1900. "Colonel Francis Lovelace and His Plantations on Staten Island." Edward C. Delavan, Jr. Pamph., pp. 33, pls. i-iv.

Special No. 23, Vol. VIII, No. 25, October, 1903, "Supplement to Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 22 and map.

Only a limited number of complete sets of the older volumes are now in stock, and orders for these will be filled in the order of application. The right is reserved to withdraw any part or numbers from sale at any time.

2. PROCEEDINGS OF THE STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

These PROCEEDINGS are printed in octavo parts, four parts to a volume. They contain the business and scientific records of the meetings of the Association and are sent free to all members and patrons in good standing.

By resolution of the Association all members and patrons may obtain back parts at 25 cts. or back volumes at \$1.00. To others the price is 50 cts. per part or \$2.00 per volume, for both current and back issues.

Volume I, including Title Page, Table of Contents, and Index, contains:

Part I, June-December, 1905, pp. 1-20, issued April 10, 1906.

Part II, January-May, 1906, pp. 21-69, issued July 9, 1906.

Part III, October-December, 1906, pp. 71-92, issued April 17, 1907.

Part IV, January-May, 1907, pp. 93-136, issued September 20, 1907.

Volume II, with Title Page, Table of Contents, and Index, contains:

Part I, October 1907-January 1908, pp. 1-46, issued October 17, 1908.

Part II, February-May, 1908, pp. 47-124, issued September 30, 1909.

Part III, July 1908-February 1909, pp. 125-177, issued August 18, 1910.

Part IV, March-May, 1909, pp. 179-251, issued September 16, 1910.

Volume III, Part I, October-December, 1909, pp. 1-54, issued April 28, 1911.

Part II, January-May, 1910, pp. 55-108, issued May 2, 1911.

The Act of Incorporation, Constitution and By-Laws, etc. (Pamph., 8vo, pp. i-xxv, 1906) and the special "Memorial Number," issued in commemoration of the celebration of the 25th anniversary of the organization of the Natural Science Association of Staten Island (Pamph., 8vo, pp. i-xxxvii, 1907), will be sent free on application.

3. THE MUSEUM BULLETIN

Monthly octavo leaflets, containing official notices of meetings of the Association and descriptive items concerning the Museum exhibits. Begun in August, 1908. Current numbers sent free on application. Back numbers 2 cents each.

Checks should be made payable to the Staten Island Association of Arts and Sciences, and all remittances and communications addressed to

Staten Island Association of Arts and Sciences,

New Brighton, N. Y.

MUSEUM STAFF

Curator-in-chief

Charles Louis Pollard, M.A.

Museum Assistant

Miss Agnes L. Pollard

DEPARTMENT OF ZOOLOGY

William Thompson Davis, *Honorary Curator*

James Chapin, *Honorary Assistant*

DEPARTMENT OF BOTANY

Philip Dowell, M.A., Ph.D., *Honorary Curator*

DEPARTMENT OF GEOLOGY, MINERALOGY, AND PALEONTOLOGY

Arthur Hollick, Ph.D., *Honorary Curator*

DEPARTMENT OF ANTHROPOLOGY AND ARCHEOLOGY

Alanson Skinner, *Honorary Assistant*

DEPARTMENT OF ARTS AND ANTIQUITIES

John Quincy Adams, Ph.D., *Honorary Curator*

DEPARTMENT OF BOOKS

In charge of the Museum Assistant

PROCEEDINGS
OF THE
STATEN ISLAND ASSOCIATION
OF
ARTS AND SCIENCES

EDITED BY
PHILIP DOWELL, ARTHUR HOLLICK, WILLIAM T. DAVIS
PUBLICATION COMMITTEE

CONTENTS

Changes and Inconsistencies in the Spelling of Local Place Names by the United States Geological Survey.....	ARTHUR HOLLICK 101
Miscellaneous Observations on the Natural History of Long Island, N. Y.	WILLIAM T. DAVIS 113
The Least Shrew in Captivity.....	HOWARD H. CLEAVES 116
The Seventeen-year Cicada on Staten Island between the Years 1894 and 1911	WILLIAM T. DAVIS 120
The Possibilities and Limitations of Nature Study in the Public Schools	HOWARD H. CLEAVES 123
Conservation, the National Issue.....	CHARLES LOUIS POLLARD 128
Our Forest Trees.....	CARL PHILIP DOWELL 144
Records of Meetings.....	148

[Issued February 15, 1912]

THE NEW ERA PRINTING COMPANY
LANCASTER, PA.

MAILED 1912

National Museum

THE STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

OFFICERS, 1910-1911

President—Hon. Howard Randolph Bayne
First Vice-President—William Thompson Davis
Second Vice-President—William Hinman Mitchill
Secretary—Arthur Hollick
Treasurer—Charles Arthur Ingalls

BOARD OF TRUSTEES, 1910-1911

I.—ELECTIVE MEMBERS

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John Blake Hillyer
George Scranton Humphrey
William Hinman Mitchill

TERMS EXPIRE 1912

Howard Randolph Bayne
William Thompson Davis
Arthur Hollick
Charles Arthur Ingalls

TERMS EXPIRE 1913

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PROCEEDINGS
OF THE
STATEN ISLAND ASSOCIATION
OF
ARTS AND SCIENCES

VOL. III

OCTOBER 1910—FEBRUARY 1911

PART III

Changes and Inconsistencies in the Spelling of Local Place
Names by the United States Geological Survey¹

ARTHUR HOLLICK

On two previous occasions, at our meetings of February 14, 1903, and November 18, 1905 (see *Proc. Nat. Sci. Assoc. Staten I.* 8: 52. 1903, and *PROC. STATEN I. ASSOC.* 1: 10. 1905), I had occasion to criticize the havoc which the government authorities are making in changing the spelling of place names on maps and in publications and thus often obscuring the origin or changing the original meaning of such names.

The postal authorities often find it necessary to make a complete change of name when a new office is established, in order to obviate having two offices of the same or similar names in one state, as was done in the case of Dongan Hills, so as to avoid possible confusion between Garretsons on Staten Island and Garrison on the Hudson. In connection with such a change or any similar one there can be no quarrel or criticism; but any alteration in the spelling of a place name, no matter how trivial the change may be, should not be sanctioned or tolerated unless some good reason is shown for it, and the burden of proof should always rest on those who propose the change. If the authorities

¹ Presented October 15, 1910.

who are responsible were consistent and followed some well-defined rule or rules when making changes, or gave some reason for doing so, there might be opportunity for discussion; but a glance at any of the maps issued by the United States Geological Survey indicates that changes are made in an arbitrary manner, without following any system and, in many instances, without any apparent reason.

The larger number of such cases arise from the use or disuse of the possessive case and apostrophe. When, for example, the name of Prince's Bay was made to appear either as Prince or Princess Bay, its supposed original derivation from the family name of Prince was destroyed, and some erroneous connection with royalty would naturally be assumed by anyone not familiar with our local history or traditions. Some of us even regard the final "s" on Giffords with affection, and would regard it as unwarranted grammatically and as unfortunate historically if it were dropped, as has been done in connection with Hulett's and Turner's.

Following are a few examples of inconsistencies in the use of the possessive case, selected at random from recently published maps of New York and vicinity:

Shooters Island,	Hunter Island,
Blackwells Island,	Randall Island,
Governors Island,	Duncan Island,
Wards Island,	Ward Point,
Grace's Point,	Lloyd Neck,
Bennetts Neck,	Seguine Point,
Willets Point,	Rodman Neck,
Nye's Neck,	Tom Point,
Garritsons Creek,	Latourette Pond,
Peters Pond,	Woodruff Creek,
Toneys Brook,	John Pond,
Phinney's Harbor,	Lambert Cove,
Johns Point Marsh,	Doctor Hole Hassock,
Bulls Head,	Owl Head,
etc.	etc.

If an explanation for these vagaries of the map makers is sought in the publications devoted to descriptions of the origin and meaning of place names,² the lack of system becomes even more glaringly apparent. For example, "Wards" Island, in the East River, is said to be "named for Jasper and Bartholomew Ward," and "Ward" Point, on Staten Island, to be "named for the man who formerly owned that part of the island." The origin of the name in each instance is from the family name of Ward; but in connection with the island the possessive case is retained, while in connection with the point it is ignored. It cannot be that such grammatical distinctions are based upon topographic features, because they do not hold good in other parallel cases, as may be seen by consulting the preceding list. A possible explanation is suggested in the fact that "Wards" Island, having been named after *two* men, might be indicated as plural, while "Ward" Point, named after *one* man, might be in the singular; but this theory will be found untenable when it is seen, a little further along, that Wrightsville is "named for Samuel Wright," while Wrightville is "named for the Wright brothers" !

However, if we have lost the final "s" from Ward's Point and Prince's Bay we have gained one in Elliotville, which is spelled "Elliotsville," as it should be, and for the reason given, viz., "named for Dr. Samuel M. Elliot." Tottenville, however, is not changed to Tottensville.

It is both the duty and the privilege of this association to do what it can to preserve the meanings of our local place names and to protest against any unnecessary changes which may tend to obliterate or obscure them. We should also endeavor, when new names are proposed, to see that they are correctly spelled and are appropriate. Such misnomers as "St. George," "Woods of Arden," etc., which have no connection with our local history or traditions, should be rendered impossible of adoption in the future.

The publication committee has been very liberal with contribu-

² Gannett, Henry. *The Origin of Certain Place Names in the United States*. U. S. Geol. Surv. Bull. 258. Second Edition, 1905.

tors to the PROCEEDINGS in regard to individual preferences in the spelling of local place names, but it has been deemed advisable by the committee that some rule or rules should be adopted for a uniform system or code of place nomenclature in the publications of the Association, and in this connection the following resolution is herewith submitted:

Resolved, That the Board of Trustees be requested to instruct the publication committee to preserve, as far as possible, the origin and meaning of local place names in the spelling of the same, wherever any such names may appear in any of the publications of the Association, and to adopt a uniform code of nomenclature for all such names in all papers submitted for publication.

[NOTE. This resolution, we hope, is not to be interpreted so as to place the Association on record as opposed to progress. Radical changes in place names are undesirable and should not be resorted to unless they are unavoidable. Such changes should be opposed by the Association. But when a slight change is made in a geographic name so as to make it somewhat shorter or simpler, especially when such a change is made by an authoritative national body and does not destroy the historical origin of the name; then we should not hesitate but fall in line with the rest of mankind in the onward march of progress.

When the United States Geographic Board decided to drop the superfluous apostrophe in geographic names, this was a forward step in the proper direction, even though some inconsistencies may have been overlooked. The historical origin of a name is not lost by the omission of the apostrophe. Neither does it detract from the honor of the person for whom a place is named to use his name as a direct modifier instead of using it as a modifier in the possessive case.

We may as well insist on writing Dongan's Hills instead of Dongan Hills, Pitt's Burgh instead of Pittsburg, John's Son instead of Johnson, or Hudson's Bay instead of Hudson Bay, as to insist on writing Prince's Bay instead of Prince Bay. The name Prince's Bay may imply that the bay was named in honor of the family name Prince, or that it was at one time owned by Prince; but it may also mean that the bay was named in honor of a prince, or that it was once owned by a prince. Likewise, the name Prince Bay may mean, either that the bay was named in honor of the family name Prince or that it was named in honor of a prince. The one form of the name or the other does not settle the mooted question whether the bay was named for royalty or for an ordinary citizen by the name of Prince. (See *Proc. Nat. Sci. Assoc. Staten I.* 8: 88. 1903.)—PH. D., chairman of the publication committee.]

Miscellaneous Observations on the Natural History of Long Island, N. Y.¹

WILLIAM T. DAVIS

The members of the Brooklyn Entomological Society have undertaken the collecting of data looking forward to the ultimate publication of a list of Long Island insects. With this in view, Mr. George P. Engelhardt, of the Brooklyn Museum, and the writer spent some days during September and October on the eastern part of Long Island; and while we collected and recorded many insects, we also noted some other facts of interest.

The beach plum, *Prunus maritima* Wang., is common on Staten Island in favorable situations, and the purple fruit is much esteemed for preserving. Of this plant we saw many hundreds on the eastern part of Long Island, and as the flavor of the fruit differs considerably on the different bushes, we were always on the lookout for the very best, and of course took many samples. We were surprised, however, to discover, near Promised Land, a little bush about fifteen inches high that bore five plums of a yellow color. One we ate and found it to be perfectly ripe, and the other four were carefully removed and placed in formalin. A stake was driven in the ground by the bush, which was also tagged, and it is our hope to revisit it some future day and see if it still continues to bear yellow plums.

Conocephalids were often heard as we tramped along and we noted the songs of four species of these grasshoppers and collected the songsters. A colony of *Conocephalus lyristes* R. & H. was found near Promised Land, thus extending the known distribution of the species northeastward on the island about 85 miles. On the downs at Montauk and near Great Pond, where the wild ducks are so plentiful, we found *Conocephalus triops*

¹ Presented October 15, 1910.

Linn. in numbers, and saw one of them being carried by the wasp *Sphex ichneumonea* Linn. to her burrow in the adjoining sandy road. In the mountains of northern Georgia we have found *Sphex* partial to *Atlanticus dorsalis* Burm. Dr. A. S. Packard records *Orchelimum* as a prey of this *Sphex*.

Katydids, *Cyrtophyllus perspicillatus* Linn., sang often in the day, as is their habit in the fall, and sometimes we heard them at 11 or 12 a. m., when the sun was at its warmest. They were also laying their eggs in the bark of the pitch pines, both at Calverton and Yaphank, and it did not seem to make any difference to them whether they faced head downward or the reverse. The ovipositor was inserted sidewise into the layers of the thick bark, and the six insects that were observed thus engaged were located on the tree trunks all the way from one to five feet above the ground. We also found two females on the trunk of a large oak, but they were not laying eggs at the time. About the first of October many of the katydids die, and we found one dead male with his caudal appendage wedged into the bark of an oak, and also one female on the trunk of a pine, that was so nearly dead that she moved her legs and antennae but feebly when we removed her from the tree.

The common box turtle, *Cistudo carolina* Linn., is described as black or dark brown above, with numerous yellow blotches, the markings being extremely variable. In the woods north of Amagansett we found a box turtle of a chocolate brown color. At first the shell showed no yellow markings, but upon being rubbed with a cloth these showed faintly. The yellow markings on the head and legs were also not as pronounced as usual. This turtle was about two thirds grown, being three and three-fourths inches in length along the plastron.

Cedar birds, *Bombycilla cedrorum*, were quite plentiful in one of the wooded hollows that occur in the Montauk downs, and we were interested to see them fly from some spreading sour gum and zigzag about in their efforts to catch the white and black geometrid moths, *Cingilia catenaria* Cram., that were very plentiful.

The birds were not always successful and quite often came back to the perching tree with empty bills.

A gray squirrel, *Sciurus carolinensis*, at Calverton, near the Old Forge on the Peconie River, had made a nest in a tree in the usual manner, but had worked into the structure the skeletonized leaves of an oak. The leaves had been eaten by the larvae of a species of *Anisota* until only the midrib and principal veins remained. The squirrel had gnawed off the ends of the branches, each twig bearing several of the skeletonized leaves, and with this wiry material the nest had been lined. In many localities the bark of the red cedar is used by gray squirrels, and it seemed to us that in this instance good judgment had been shown in using the best material at hand.

The Least Shrew in Captivity¹

HOWARD H. CLEAVES

Because of his diminutive size and peculiar habits, perhaps, there is no local mammal that has been observed less and about which less has been written than the least shrew, *Blarina parva* (Say). In fact, not until recently (that is, within the past few years) were any taken at all on Staten Island, and not until very recently were any obtained in a sufficiently perfect and healthy condition to allow of their being kept for any appreciable length of time in captivity. I believe that heretofore the specimens found were either dead or were killed in the catching. Mr. James Chapin has one or two records of having found identifiable parts in owl pellets. The reason, it is said, that both the short-tailed and the least shrews are not taken more frequently by owls and hawks is that the birds of prey object to the disagreeable odor that both of these mammals give off. It is, indeed, very offensive, even to the human nose, and if the tiny beasts taste anything like what this odor might imply, it can be readily understood why hawks and owls, even in winter, when hard pressed for food, abide by the rule of "hands off," or rather "talons off."

On Sunday, September 25, 1910, Mr. Alanson Skinner came to my house at "Prince's Bay" and turned over to me two least shrews which he and the Wort boys had captured at "Lake's Island," Staten Island. Out on this lonely piece of land, which is not an island at all, but simply a sandy strip isolated from the mainland by salt meadows, there stands an old deserted house, and near the house, where it is evident that a barn once stood, there are strewn over the ground large sections of tarred paper. It has been our custom for several years to go each fall to this area and hunt for meadow mice under the pieces of paper. Two or three

¹ Presented at a meeting of the Section of Biology, October 31, 1910.

mice were generally our reward, and one of these was kept captive for several months, in 1909, by Mr. James Chapin. But on the occasion of the recent "round up," in which I unfortunately did not take part, it was the good luck of the participants to capture not only meadow mice but two of the rare little least shrews; and it is of my few days' experience with these that I would write.

Before they were handed to me they had been roughly wrapped up in a handkerchief and carried in a rather tight coat pocket. This, coupled with the difficulty of creating a congenial artificial environment and supplying proper food for the delicate little creatures, may have some bearing on the fact that one survived only three days, while the other lived until the morning of the fifth day. But after being removed from the handkerchief they were given a more roomy apartment in the shape of a breeding cage for moths. At the bottom of the cage was placed a piece of sod, which retained considerable green grass, and in one corner a couple of handfuls of cotton. Although it was not expected that the shrews would touch them, a number of kernels of Indian corn were scattered about in another corner of the floor of the cage.

And now began the nightly search for earthworms, for these make up a part of the approved diet of the least shrew. Each evening I took a lantern and scouted about for "night walkers" from one end of our yard to the other. But angleworms were as scarce, so to speak, as "hens' teeth," for the ground was hard and dry as the result of a long rainless spell, and the night air was cold. However, the first search resulted in the capture of seven worms, and only a half of one of these remained the next evening. The next night only two worms were captured, and when I examined the cage on Tuesday night (September 27) I discovered that in addition to having done away with the worms the shrews had attacked the kernels of corn, gnawing out, in each case, only a part of the soft germ. From the first I had observed that one of the shrews was indisposed and would remain

under the pile of cotton or under the sod while the other scurried about the cage and attacked the worms. In fact, I am quite certain that this quiet individual ate little or no food and that his death, which occurred some time on Wednesday, was caused by starvation. My observations, then, were confined principally to the more active and long-lived individual. He, too, stayed a great deal under the cotton, but this was mostly in the daytime; at night he became active, although sometimes he disliked to show himself when a lamp was near. Two or three times I removed the cotton and the sod, leaving no place for retreat, and, reaching into the cage, touched and even stroked the little fellow on the back. At no time did he endeavor to climb up the wire-screen walls of the cage, and when my fingers touched him he stood very still and did not seem in the least perturbed. Had this been tried with a whitefooted mouse, probably the rim of the cage would have been cleared with a single jump. However, a lamp almost always stood close beside the box on these occasions (unless it was done by daylight), and the apparent tameness of the subject may not have been tameness at all but a partial blindness caused by the glare of the light.

On Wednesday night I succeeded in catching five earthworms and by the following evening the single shrew had devoured them all. On several occasions I observed very closely the methods employed by the captive in attacking and devouring a worm. To watch closely the movements of the shrew it was necessary to place a lamp near to the cage, and possibly on this account he was not so active as he would otherwise have been; but I am sure that, even so, he was too energetic to suit his prey. Darting out from his retreat beneath the cotton, he would seize a worm near the head and tug away so hard that the shrew's feet would slip from beneath him on the loose dirt on the floor of the cage. Suddenly he would release his grip and take hold in another place, the worm writhing to no effect at each attack. Then the shrew would scamper to cover, but in a second reappear from beneath the cotton and dart again at the worm, always taking hold at the head.

After several minutes of this incessant work the worm would finally be dragged under the cotton, when the feast would begin.

In order to watch the meal progress it was necessary to gently lift the cotton so as not to disturb the diner. Without going through the formality of killing the victim, the shrew would begin at once to gnaw away at the head. To any creature having a more highly developed nervous system than the earthworm this would undoubtedly have been a most painful proceeding. And it must have been a tedious task, for at the end of five minutes only about a quarter of an inch had been consumed, and yet the shrew ate five worms in a rather short time, supposedly in a night.

The only sound that I heard come from the prisoner was an almost inaudible "piff, piff," uttered very rapidly (almost explosively) while he was eating.

My chief regret is that he did not survive long enough to be photographed.

The Seventeen-Year Cicada on Staten Island between the Years 1894 and 1911¹

WILLIAM T. DAVIS

Next June our island will resound with the songs of the seventeen-year cicada, *Tibicen septendecim* L., for 1911 is "Locust Year" in the valley of the Hudson. This brood covers a considerable area and extends to the south into the mountains of North Carolina.

It is well known to entomologists that while the seventeen-year cicada appears periodically in certain districts in great numbers, there are other years when it is to be found in the same places but in less numbers. The limits of the various broods are not sharply defined, and when a few seventeen-year cicadas are found on Staten Island, for instance, there may be a considerable visitation of them not many miles away. The advent of the white man with his farming operations and the consequent destruction of the forests, have had an influence upon the cicadas and, no doubt, broken up the broods to some slight extent.

In the *Proceedings of the Natural Science Association of Staten Island* for February 1894, an account is given of the appearance of the seventeen-year cicada on the island between the brood years of 1877 and 1894. In 1881 a considerable number appeared belonging to the brood now known as number VI. In 1885, 1888, and 1889 only slight evidence was found of the occurrence of the insect on the island. In 1890 and 1892 a few were found, and in 1893 they were more numerous, but these last may have been precursors of the general swarm of 1894.

Since 1894 the seventeen-year cicada has been observed on the island during eight different years, as appears by the following chronological record.

¹ Presented January 21, 1911.

1895

On June 15 I heard several seventeen-year cicadas singing near the middle of the island, and on the 16th several others were heard in the Clove Valley. They also occurred at West New Brighton.

1896

The only evidence of the cicada on the island during this year was the finding of a pupa case on Todt Hill on the 6th of June.

1897

Dr. Joseph C. Thompson gave me a red-eyed cicada with pupa skin, which he had found on a tree on Belair Road, Rosebank.

1898

As the seventeen-year cicada appeared in considerable numbers on the island in 1881, it was expected that they would be found quite abundant in 1898 (see *Proc. Nat. Sci. Assoc. Staten I.* 6: 60. S 1898). A cicada pupa was found in its cone on the side of the Clove Road as early as April 30. Later other cones were found at the same place among the dead wet leaves, and by the middle of June the insects were heard in many parts of the island. They were abundant on Todt Hill and Ocean Terrace, also in the Clove Valley, and on June 12 I received a box containing 104 cicada pupas collected by the family of Mr. Charles W. Leng at West New Brighton. Mr. Louis H. Joutel also found a considerable number of cicadas on the 5th of June at Fort Lee, N. J.

1902

In June a seventeen-year cicada was found at West New Brighton in Mr. Leng's garden, and on June 12 I found a pupa skin in the valley of Logan's Spring brook. Considering that Brood X was so abundantly represented in parts of New Jersey, it is remarkable that more cicadas were not found on Staten Island in 1885 and 1902.

1906

In April Mr. Alanson Skinner gave me a pupa that he had found under a stone in the Clove Valley, and on June 10 we heard

a seventeen-year cicada singing in a tree at Richmond Valley. On parts of Long Island, as at East Port, Yaphank, Half Way Hollow hills, Pinelawn, etc., Brood XIV appeared in considerable numbers.

1907

A note was made upon this brood, now known in Mr. Marlatt's arrangement as number XV, in these PROCEEDINGS for October, 1907, from which we quote the following: "On March 31, Mr. Alanson Skinner gave me a pupa that he had found under a stone at Woodrow. On June 22 I heard several cicadas singing in the trees at Woodrow and vicinity, and found two pupa skins in an apple tree on the farm of Mr. Isaac Wort. Mr. Wort had also heard the cicadas at various times, and he presented me with a pupa which he had found some time before my visit.

"The following day a cicada was heard at Watchogue at the other end of the island. Later in the summer, while with Mr. Henry Bird in the Clove Valley, we each found a pupa skin of the seventeen-year cicada. Mr. Chas. P. Benedict informs me that he found in June many pupa skins as well as fully developed cicadas at his house on Manor Road, West New Brighton. In New Jersey the seventeen-year cicada occurred at Westfield, Plainfield, and Newfoundland.

"It may be seen from the foregoing that the individuals were quite numerous and no doubt sufficiently so to insure the insect's appearance in 1924."

1910

Mr. Isaac Wort, of Woodrow, reported to me that he had heard several seventeen-year cicadas singing about his farm in early summer but that they were not numerous. Seventeen-year cicadas are usually to be found in small numbers in the summer previous to their regular appearance, and no doubt those of 1910 were precursors of the great swarm that is to appear in May and June, 1911.

The Possibilities and Limitations of Nature Study in the Public Schools¹

HOWARD H. CLEAVES

Naturally the conditions conducive to nature study are least favorable in the city schools, considerably more agreeable in the suburban ones, and most satisfactory in those in the country.

Often the only impression that the average city youngster has of bird life, for instance, has been gained through meeting the English or house sparrow in the streets, by watching or listening to the European starling about the church steeples, by seeing the domesticated pigeons which are so often raised on the roofs of city tenements, or by observing the herring or harbor gulls at the water front or from the ferryboats. To be sure, if the youth cares enough about the birds to spend his time in the larger parks he may see numbers of semidomesticated ducks, swans, geese, etc., and not a few truly wild birds, which stop for a time in spring and fall or even remain during the summer to nest. Or he may go to some zoological park or private aviary, both of which, however, are objectionable to a certain degree, and do not furnish the material most desired for the furtherance of the work now under consideration. At the zoological park the majority of beasts and birds, having been brought from distant localities, anywhere from the tropics to the arctic regions, are of great interest, but do not instruct the child in the customs and manners of those creatures which he might expect to find in his immediate vicinity. Again, we must always remember that although much may be learned by watching the birds in the zoological park, so far as plumage and general appearance are concerned, they are existing under unnatural conditions which lead to habits so at variance with their normal activities that these same birds if

¹ Presented January 21, 1911.

observed in their natural haunts might not be recognized. It is reasonably safe to conclude, then, that the pupil who confines his or her observations solely to the zoological park is very likely to form mistaken and distorted conceptions of animal life.

The aim of nature study is to cultivate a sympathetic acquaintance with nature and to develop the power of observation. The children should be brought into actual contact with the object of study.

The city boy will find some way to satisfy his desires when there is aroused in him an intense interest in nature either through visits to the parks or by reading. He will persuade his father or guardian to accompany him on Saturdays or holidays to suitable localities beyond the limits of the city, where he may ramble among natural woodlands and match his wits against those of the creatures of the fields and forests. But this sort of thing is not always practicable with an entire class of children, for even if the teacher were willing to undertake such an excursion, the plan is by no means to be recommended when birds are the objects to be sought. In the first place, there are likely to be several children in the class who do not have at heart the real interests of the rest of the company, and who are either continually laughing aloud or chattering with those who might otherwise indulge in some serious observations. And, in the majority of instances, even though those in the party should maintain silence, it is absurd to think of studying the timid birds by advancing on their domains in a great army.

In the study of botany it is different: a plant is a fixed object which can be observed and examined as one wishes.

In the suburban districts we have conditions that are so different from those in the city that the school child is in a position to keep constantly in touch with certain of the wild things. In fact there are some birds that seem to prefer these semirural places (where men's homes are not thickly and still not too sparingly distributed) to the more strictly open country stretches. Here the child can put out bird houses of his own manufacture and

have the satisfaction of seeing them tenanted by bluebirds or wrens. In the winter he can erect a small shelf or food counter and be delighted beyond description by the charming presence of nuthatches, woodpeckers, chickadees, titmice, juncos, etc. But, perhaps best of all, he can observe the birds daily and at all times of the year by walking only a short distance from home; and even while going to and returning from school he may see something of sufficient importance to warrant its being reported to his teacher.

Although we may expect to find the maximum of wild life in the purely rural sections—and no doubt we could discover many a country lad whose ability to name the birds would fill us with admiration—yet it is a fact, perhaps as a result of the very abundance of nature's treats, that many country boys are either not appreciative of the riches of nature or are callous to them. Thus it is that the children of the country take as a matter of course or even treat with indifference those things which their little cousins of the city would be eager to observe and to be told about, but which they are denied through unfortunate circumstances.

But what applies in the city to birds cannot by any means be so uniformly applied to other forms of life. To suit the needs of the general observer, plants grow as well in the botanical garden as they do in the open country. Unlike the birds they are quite constant in habits under the somewhat abnormal conditions produced by man. The trees in the parks, too, although not always the healthiest of specimens, will nevertheless serve the purpose of enabling the pupil to distinguish the various kinds.

When we arrive at the subject of fishes we find the conditions somewhat reversed, for the city boy or girl has at his or her disposal the best of opportunities for observing the members of the finny tribe in the aquarium. And what is true of the fishes is also true of the crustacea (lobsters, crabs, etc.) and of certain turtles, waterbugs, and tadpoles.

In my mind, therefore, nature study in the schools seems to resolve itself into three phases:

- I. THE CITY, where knowledge must be gained *in* the class-

room from books, mounted specimens of birds, etc., and from various other specimens which are kept in a small aquarium in the room or are in some other way available; *outside* of school in the zoological park, the botanical garden, the public parks, the aquarium, and the museum.

2. THE SUBURB, where a happy medium exists. Here the pupils in school possess not only all of the classroom facilities of the city children, but just outdoors can obtain first-hand knowledge which inspires both the teacher and the scholars.

3. THE COUNTRY, where ideal conditions for nature study exist, but where the least use (in many cases) seems to be made of them. I have pointed out one or two slight advantages that the city has over the country, but these are not to be compared with the overwhelming wealth of material that crowds about the very dooryard of the country school.

The desirability of nature study in the schools cannot fail to be recognized, for the future conservation of our remaining natural resources in all three of the great kingdoms depends largely upon the proper education of the rising generation. But unfortunately there seems to be a lack of knowledge on the part of many school teachers and a scarcity of satisfactory books on natural history for practical use in the schoolroom. For instance, about two weeks ago a school teacher called my attention to a small volume entitled *Stories from Birdland*, written in 1896, which was designed for use in the lower grades. Although the book has for fifteen years been used as a reader in the primary grades, and has no doubt been read by many children in the libraries, yet it abounds in errors of no minor degree, both in the text and the illustrations. Some of these mistakes were so noticeable that I could not refrain from noting them here.

If the author had had any experience searching for the nest of the yellow-breasted chat she would have known better than to state "he is in this bush, close beside his little nest." He is anywhere but beside the nest when anyone is near. And, after the nest is located (if one is fortunate enough to find it), it will be discovered to be not a "little" nest, but quite a bulky one. Speak-

ing of ducks as being unable to perch on a limb or walk gracefully may be very well for some species, but it cannot be universally applied. For instance, the tree ducks of northeastern South America constantly alight on trees and nest in hollows in them; and our wood duck nests in hollow trees, as do also several other species. As for being awkward while on land, this is so when speaking of the domestic kinds and many wild ones as well, but the green-winged and blue-winged teals are as nimble on the land as they are in the water. And it takes a lively person to capture a young black duck on the run. The illustration of the fishhawk, as well as of many other of the birds mentioned in the book, is miserable, and could scarcely lead to anything but confusion in the mind of the child who might happen to go forth to see things for himself. Imagine being able to tell from a distance (as seems to be the case here) the size of a bird's beak. At the bottom of page 133 the author falls into one of the most common errors of those who do not observe, by stating that the fishhawks were collecting the nesting material in their beaks. On page 140 the author errs by stating that the sparrow hawk builds in an old crow nest. These little hawks invariably deposit their eggs in hollow trees. Although many reports have been received to the effect that children are carried off by the golden eagle, investigation in each case has proved that fancy and not fact was the base of the story. The fact that the author allows herself to make such a statement indicates that she is not qualified to produce a book for the correct education of the child.

I have purposely avoided mentioning here at length the public museum as an aid to nature study in the schools, because I have striven to adhere principally to the subject of living objects. But the museum is one of the most valuable assets of any commonwealth; an intelligent community could no more dispense with its museum than it could do away with its library. The possibilities for school work by having the staff of a museum cooperate with teachers and pupils are unlimited. In its educational exhibits alone a museum finds its justification, to say nothing of the many other functions which it fulfills.

Conservation, the National Issue¹

CHARLES LOUIS POLLARD

One may be pardoned for a certain degree of hesitancy in discussing a subject widely exploited in the press and on the platform, and more or less familiar to everyone aiming to keep pace with the trend of modern affairs. Conservation of natural resources, as a phrase, has indeed become the watchword of the times, and opportunely, for until the principle of conservation becomes a fixed public policy, the execution of which is insured by proper state and federal laws, we shall have with us always that economic menace known as the increased cost of living, which we strive feebly to avert by pitifully inadequate means. Tariffs may come and go, special taxes of one kind or another may be enacted, farms may be abandoned or renewed; but there can be no permanent betterment of existing conditions until we humbly recognize that man cannot dispense with the good gifts provided by nature, that he must use these gifts wisely, judiciously, and must conserve them by every means within his power. Civilization has effected to a wonderful degree the mental and moral advancement of the human race, and we are constantly discovering new methods of harnessing the forces of nature for our benefit. We have no reason to suppose that man will be mentally retrogressive in the further course of evolution; and if we are the predecessors of a race possessing superior mental endowments, is it unreasonable to suggest that we should strive to preserve from utter barrenness the earthly heritage of future generations?

Conservation is a broad and elastic term. It may be held to include the preservation not only of such natural resources as

¹ Lecture delivered before the Men's Club of Forest Hill, N. J., January 1911. Presented at the meeting of the Association February 18, 1911.

are of direct economic benefit to man, chief among which are the forests, coal and mineral deposits, fur-bearing animals, etc.; but also of other natural gifts whose value to the human race may be less obvious, but which are none the less important in preserving that delicate adjustment between organized and unorganized life known to biologists as the balance of nature. Various public and private organizations have therefore come into existence, since the conservation movement assumed a national importance, having for their aim the education of the people in this phase of the subject. The Audubon Society, the two societies for the protection of native plants, field and outing clubs, and various civic organizations are accomplishing excellent work for the cause. Nor should such activities be regarded lightly when they happen to be concerned chiefly with the esthetic aspect of conservation. If we admit the value of the fine arts as an educational factor in our intellectual development, we must also recognize that true art finds its best expression through natural inspiration. Thus, the plant and animal life of field and woodland play a more important part in our own existence than the mere political economists would have us believe. As a scientist I have no sympathy with the doctrine that the earth was made for man alone, and that the sole aim of human knowledge and endeavor is to minister to his needs. Man is merely a marvelously developed organism amid a host of minor organisms, the capstone of the great arch of evolution. He is surrounded on all sides with the wonderful pages of the world's geological and biological history, and a thousand untouched fields of activity are open to him. Yet there are hosts of people whose attitude toward man's function on the earth and his relation to the rest of nature may be summed up in the old saying, "Let us eat, drink and be merry, for tomorrow we die." Such as these would employ natural resources for the best interests of the present generation, leaving future generations to take care of themselves. They would waste no time in the study of what is not of practical use to mankind, having abiding faith in human ingenuity to provide substitutes for exhausted natural commodities.

I trust that I may not be accused of undue sarcasm in my view of this philosophy, but it finds expression in so many ways that it must be reckoned with as part of the public attitude toward the conservation question, and it is for this reason that we are constantly obliged to emphasize the practical side of facts and statistics, and that appeals based on considerations of sentiment or esthetics have very little weight with our people. I shall limit myself, in the remainder of my address, to a discussion of forestry problems, for there is no doubt that from every standpoint this aspect of conservation is of paramount importance and interest.

In the variety and extent of its hardwood forests the United States originally surpassed every other country of similar magnitude. These forests were of five more or less well-defined types. The northern forest extended as a belt through northern New England, New York and part of Pennsylvania, across the region of the Great Lakes to Minnesota, with an extension in the higher Alleghenies as far south as Georgia. It was composed principally of coniferous trees, chief among which was the white pine, but it included also among hardwoods, birch, cherry, and sugar maple.

The southern forest became manifest in southern New Jersey, and extended thence southwestward in a belt of increasing width, covering the south Atlantic and Gulf States, as well as the eastern portion of Texas, part of Arkansas, and southern Missouri. In this forest the long-leaved or yellow pine predominated, and in suitable localities occurred stands of gum, cypress, oak, magnolia, and many other hardwoods of minor importance. Between these two regions stretched the great central forest, in which the most valuable of our American hardwoods attained their maximum size and development. It included oaks of various kinds, walnut, hickory, elm, maple, cottonwood, basswood, white poplar, chestnut, sycamore, ash, red gum, and many other species.

Separated from the eastern forests by the broad area of the Great Plains, the Rocky Mountain forest followed the general

trend of the mountain range from which it was named, growing chiefly on the higher plateaus and slopes. It was almost entirely coniferous, being composed of western yellow pine, lodgepole pine, Douglas fir, larch, spruce, and other trees, and was limited to the westward by extensive desert areas in Arizona, Nevada, Utah, Oregon, and Idaho. It was then replaced along the Sierras and in the Cascade ranges by the Pacific forest, which was also of the coniferous type, and included redwood, sugar pine, western red cedar, Douglas fir, and various other pines, firs, and spruces.

I have used the past tense in speaking of these forests, for the reason that as the settlement of the country has progressed they have been so much reduced by cutting, clearing, and fire as to be but remnants of their former luxuriance. It is estimated that the virgin forest of the United States covered 850 million acres and contained 5,200 billion board feet of saw timber. The latest government report (1909) that I have examined, gives the present acreage as 550 million, with a total stand of 2,500 billion board feet. The heaviest reduction is to be observed in the central forest, where the present stand is only one fifth of the original. This is to be expected, in view of the fact that the hardwood forest of the Central West occupied a soil of great agricultural value, and was consequently rapidly cleared to make room for farms. The Pacific forest, on the other hand, owing to its comparative inaccessibility and the cost of freightage to eastern lumber markets, still occupies 90 per cent of its original area and includes 80 per cent of the original stand.

With these facts in mind, our next inquiry is how long the supply of timber in this country may be expected to last. The figures on this subject are not altogether satisfactory, owing to the uncertainty of various factors which must enter into consideration in the calculation of estimates. We know, for example, that the annual cut of timber for all purposes averages about 50 billions of board feet, of which four fifths are used for lumber and the rest is devoted to other purposes, such as pulpwood, shingles, cooperage stock, veneer, poles, distillation, etc. But we can

obtain no satisfactory data upon the quantity of hardwood used annually for fuel, or upon the losses occasioned by fire, destructive storms, or such industries as that of turpentine manufacture in the South, which results in the death and waste of many trees. The most conservative estimate of the consumption of wood through these various agencies is 50 billions of board feet, which with the timber cut already mentioned brings the total to 100 billions consumed yearly. It is safe to say that the annual growth of our forests does not exceed 60 board feet per acre. This means that the amount of wood used every year for lumber alone is greater than the annual amount produced by the growing forest; that the annual consumption is, in fact, three times the annual growth.

It was stated that the total present stumpage was placed at 2,500 billions of board feet. If the rate of consumption above indicated does not increase, and if the annual growth continues in the same ratio—both of which suppositions are highly improbable, if we judge from past and present conditions—the timber supply in this country will last 35 years. A very slight disturbance in the above ratios will reduce the time limit to an alarming degree.

We can scarcely overestimate the serious results of an exhaustion of our wood supply. It is true that invention and applied science are constantly furnishing us with adequate substitutes for wood in many manufactures. Modern buildings of brick, stone, cement, and steel, being fireproof, are infinitely superior to the old houses of wood. It has been found that ships, railway coaches and ties, and many kinds of furniture may be made to advantage of steel; while numerous household articles formerly classed as woodenware are now of metal or papier-maché. But no satisfactory substitute has been found for wood pulp in paper manufacture, and the total output of cotton and linen rags, once the exclusive source of paper, would scarcely be sufficient for the daily press of one of our large cities.

The modern fireproof building still requires large quantities of

lumber for interior trim and finish. Failure of the turpentine supply would cause an enormous increase in the cost of paint, varnish, and allied commodities. But the most serious result of the exhaustion of our timber would be the scarcity of fuel. The coal supply is steadily waning, and there are vast sections of the country in which the price of coal is practically prohibitive, so that wood is still the only fuel for domestic and even manufacturing purposes. While it is possible that some utilization of peat deposits may yet be made, as in various European countries, wood will continue to be burned so long as there is any of it left; and it must be remembered, moreover, that mere brushwood is of little utility for this purpose, and that while dead or fallen trees may be cut for firewood, by far the largest portion of the amount annually consumed, under present conditions, consists of otherwise marketable hardwood lumber.

We cannot depend upon other countries for relief. The hardwood forests in Canada are of limited extent, and the softwoods are being rapidly depleted to yield food to the pulp mills, about eight million cords being imported annually by the United States, in addition to the quantity consumed at home. Tropical hardwoods must always remain high priced, owing to the difficulty and expense of lumbering, hauling the logs to a seaport, and freight-ing them to this country. A review of these considerations proves, therefore, that if we are to avert the total destruction of our merchantable timber within the next century, we must devise a means of reducing waste from all causes to a minimum, and of so managing the forests as to insure a total annual growth or renewal in excess of, or at least equal to, the annual consumption.

I wish to emphasize here my belief that apart from sentimental considerations, the prospective failure of the wood supply is the only practical and logical basis for the conservation movement as applied to forestry. Much has been written and said as to the relation of forests to climate and water supply, as also of the danger from floods in deforested regions. I think the importance of the first theory is very generally overestimated.

This phase of the subject has been exhaustively treated by Professor Willis L. Moore, chief of the Weather Bureau, and a summary of his conclusions may be of interest, as tending to disprove certain very widely circulated impressions. He points out that climatic changes are slow, extending through long periods of time, and that increase or diminution in the forest area is the result, not the cause, of such changes. This is shown by observation of conditions in such high latitude countries as Alaska, where the density of the forest has not been appreciably diminished although the climate has undergone a gradual change, due to the retreat of the glaciers. In desert regions the existence of dead forests, often petrified, as in New Mexico and Arizona, indicates that the climate became arid long before the forest succumbed. Certainly in these cases no human agency could have compassed the destruction of the forests and by this means converted the land into a desert.

It has been observed that rain gauges placed in a forest always catch more water than those exposed in open fields. This might seem to indicate that precipitation is greater on such areas, but as a matter of fact, the construction of the gauges is such that when sheltered from the wind they invariably catch more rain drops. This accounts wholly for the differences in record between the two situations. So also, while the temperature of a forest is lower and its relative humidity higher than in an adjoining field, this is purely a local condition, and the general climate of the state or even of the county in which such a forest was situated would not be appreciably affected by its removal. In other words, destruction of the forests cannot be said to result in any marked decrease in precipitation or any alteration in the mean annual temperature; and this is amply demonstrated by the records of the Weather Bureau. In the Ohio Valley, for example, where deforestation has been extensive, the curve chart covering a period from 1834 to the present time shows a steady average, while in New England, where deforestation began even earlier in our history, there has been an actual increase in precipitation during the same period.

Turning now to the question of the effect of forests on floods, we find the problem complicated by a number of important factors. The volume of water that enters the springs and tributaries of rivers is dependent upon the nature and character of the soil, upon the general climate of the region, and of course upon the total amount of precipitation. Its movement is determined by gravity, resulting from the degree of elevation and by the condition of the channels. In a comparatively level country, as Professor Cleveland Abbe has pointed out, floods may occur in every small tributary, and yet these floods may so enter the main channel as to cause only a gentle rise, while in other cases in similar regions the small floods may produce a deluge in the main channel, entirely irrespective of the extent to which the surrounding watershed may be forested. It is probable, moreover, that rich loamy soil under cultivation is almost equally as good a conserver of the rainfall as the porous leaf mold of the forest floor, since the latter, when saturated, is apt to part suddenly with its moisture, with a disastrous flood as the result.

We may conclude, therefore, that if all or most of our forests lay upon level or gently sloping areas, lumbering operations would have little effect upon the spring floods. As a matter of fact, however, we have already seen that they are now practically confined to the slopes of mountain ranges, and here I am convinced from personal observation, that their removal is attended by serious results. The southern Alleghenies in North and South Carolina afford examples of all stages of denudation. When the forest is lumbered, every tree is cut down, the marketable ones sent to the sawmill, the others converted into firewood. When a mountainer wishes to start a farm or pasture, he cuts out the small trees for fuel, and girdles the large trees. Within a year or two the latter are dead, and the ground is then burned over to consume the brush and reduce the stumps. In either case the result is the same when the slope is steep. Heavy rains first wash away the surface coating of humus and then gradually dispose of the top soil, exposing the bare rock beneath, or, in a clay

region, scoring unsightly furrows and deep gorges in the surface, which then bakes hard in the sun. Such wood lots are unfit for cultivation within a few years; but the wasteful process continues, as the mountaineer seeks only pasturage for his cows, and lumber has little value in his eyes. I have seen solid white oak trees two feet in diameter standing like unsightly skeletons in a mountain forest that had been thus wrecked.

When we pass to the consideration of what has already been accomplished along the lines of practical conservation, we cannot fail to be impressed with the fact that it is largely due to the wisdom, foresight, and persistence of one man, and to the courage and tireless energy of another. Whatever opinion may be held of the unfortunate controversy which deprived the federal service of one of its most able officials, and however we may differ on questions of policy in forest management, the credit for making conservation a vital issue before the people must be awarded to ex-President Theodore Roosevelt and Mr. Gifford Pinchot. The latter succeeded, as chief forester of the Department of Agriculture, Dr. B. E. Fernow, who is often called the father of American forestry, and who was the first to demonstrate the value of scientific methods as applied to forest management and to call public attention to what had already been accomplished in this direction in Germany and France, where the conservation problem was equally serious. Thus the seeds were sown of that mighty crop which Dr. Fernow's successor nurtured and brought to maturity; and one of the smallest divisions in the Department of Agriculture has now become one of the most important of its bureaus, employing a field force alone of over 2,000 men.

Mr. Roosevelt, as is well known, was always an active supporter of Mr. Pinchot's policies. He made extensive additions to the national forest reserves, and the wonderfully rapid development of the Forest Service since 1900 has been due in large part to his powerful influence.

In 1909 the reserves included a total acreage of 194,505,325, of which over 27,000 had been added during the previous fiscal year.

The largest acreage is in California, with Alaska as a close second. It is a matter for regret that with the exception of Florida, there is no state land east of Michigan containing a national reserve, although there is imperative need of protection for the still extensive forests of the southern Alleghenies. The lack of an Appalachian reserve is deplorable, but there is hope that Congress may yet intervene to save this noble mountain area from devastation.

Since the national forest reserves are located chiefly in the far western states, it is natural that the question of their further extension and the problem of administration should become a political issue in that section. The West has been more or less unjustly accused of being unfriendly to the conservation movement. But we must bear in mind that the thickly settled East has passed through a historical experience upon which the West, in spite of its phenomenal development, is but just entering. As I have already indicated, the early American colonists settled in the midst of a virgin forest of wonderful variety and luxuriance. In the period of interior colonization following upon the Louisiana purchase, the forests were rapidly cleared to make way for farms and villages. Timber was so abundant, and the area of the country so vast, that none could foresee a possible exhaustion or even scarcity of the supply. Hence it often happened that homestead sites were selected in regions unsuitable for agriculture, only to be abandoned after the woodlands had been destroyed. In such cases the land usually reverted to scrub, or inferior forest, and all possibility of further commercial development was lost. If the early settlers could have been endowed originally with that foresight and judgment which is unfortunately gained only by sad experience, they would have selected for cultivation those lands in which the tree growth indicated a soil of great richness and productivity, leaving the forest elsewhere untouched as long as possible; and the history of New England and the Middle States would not then have told a tale of neglected homesteads and abandoned farms. As Pinchot has pointed out, a mistake

of this kind would be far more serious in the West, because in dry climates the forest is much more easily destroyed; and even in the case of land adapted for cultivation, if it happens to be covered with a stand of young timber approaching marketable size, clearing at the present time would be like withdrawing money from a savings bank a few days before the interest falls due.

But it must be remembered that the West is now the land of home seekers. It needs settlers to develop its resources, and it wishes to encourage them by every possible means. It is therefore scarcely surprising that the western public, not yet fully educated in the lesson of experience which the East has learned, nor perhaps quite realizing the importance of conservation as a national policy, should look with impatience upon the withdrawal of vast tracts of timberlands by the federal government, and should even consider such withdrawals as an infringement of state rights. In an address recently delivered before the Brooklyn Institute of Arts and Sciences, Senator Borah, of Idaho, presented the western viewpoint with considerable skill. He pointed out that every year thousands of men, repelled by the difficulties of profitable farming in many western states, are moving to Canada, where they can obtain homesteads to better advantage, and where agricultural operations in the vast wheat-growing areas are certain of success. He considered the national forest reserves responsible for this condition of affairs, in view of the fact that they include large tracts which, when cleared, are preeminently suitable for cultivation; and he argued, on behalf of the western states generally, that while the establishment of national reserves is desirable on general principles, the areas thus segregated should not include potential agricultural land. I am inclined to think there is force in this argument. It is well known that our farms do not keep pace with the needs of our growing population, and yet our grain fields might be large enough to supply foodstuffs in plenty, without recourse to other countries. In the West, therefore, it would be the best policy, from the standpoint of national economy, to encourage settlement in every possible way, to pro-

mote agricultural operations, and not to allow a slavish adherence to the mere theory of conservation to interfere with the practical execution of common-sense ideas. In this connection it should be a source of gratification that under irrigation it has been found possible literally to make the deserts blossom like the rose, and since the conversion of these deserts into arable land means practically the addition of so much capital to our working resources without in any way conflicting with the demands of conservation, the benefits of irrigation should be extended in every possible way.

I propose to touch very lightly on the question of federal versus state control of the national forest reserves. It is based upon that greater problem of federal as opposed to state rights, a problem around which all political theories have centered since the establishment of the republic, and which is certain to remain a compelling issue, in one form or another, so long as our present form of government shall endure. The advocates of broader federal authority are committed to the general policy of centralization as a natural corollary. Those who favor state control, on the other hand, are usually disciples of the Jeffersonian school, though not necessarily allied with the Democratic party of the present day. While open to conviction on the subject, I believe that the best practical results can be secured by a judicious cooperation between state and federal authorities in working out the complex problems presented by the management of these reserves. It is highly desirable, of course, that whenever certain principles or conditions are of universal application, they should be safeguarded by federal laws. Thus protection from fires, which is really the chief pillar of the conservation movement, is well provided for under the present system of employing forest rangers and guards. In the year 1908, when disastrous fires worked havoc throughout the country, the national forests suffered relatively little, a fact which testifies to the efficiency of the service. Three states, Oregon, Washington, and California, have rendered effective cooperation in this work by commissioning the federal

officials as state fire wardens, thus enabling them to extend their jurisdiction over adjacent forested areas.

Many of the reserves are at the present time in need of serious attention. The policy of the government is to cut the timber, not in the reserves containing the largest stand, but in those where the need of the community is greatest and the market consequently higher. Thus in the easternmost reserves there is a steady demand for timber, which can be easily transported by convenient railroads to the non-timbered regions still farther to the eastward. On the other hand, the largest supplies are located far to the west, in regions where there are also extensive private holdings awaiting a market. As a result, these western reserves contain a large amount of timber annually wasted through passing its prime and undergoing decay. In California less than one half of one per cent of the timber in the reserves of that state was cut for sale in 1908. This is not a wise policy, and it is sure to result in injury to the reserves. As soon as timber reaches a marketable size the best forestry practice requires that it should be removed to make way for younger growth. Thus the forest is constantly renewed, and may be made to yield a good interest on the national investment, the amount being increased by the sale of stock-grazing permits and other privileges. There is reason to believe that the sales of timber from the reserves will constantly increase as the Department of Agriculture gains experience in the introduction of sound business methods, and it is a fortunate circumstance that the law of 1905 to a large extent safeguards the reserves from the entry of speculative homestead claims. It may be argued that the government should not enter the lumber business, but should leave the exploiting of its timberlands to private owners. The obvious reply to this is that governmental control alone will save the forests from immediate conversion into cash and insure the preservation of forest products for future generations.

Reforestation is a subject of great importance, whether viewed from the public or private standpoint. Modern forestry has

proved that otherwise unprofitable areas may be converted into timberland affording profitable returns within a reasonable time. It has also shown that to a limited extent tree planting can be carried on in the plains, even without irrigation; and the allied science of botany has aided in the selection of the species best adapted to any given situation or requirement. Reforestation is also practicable in connection with the national reserves; for at the present time they include many barren areas resulting from repeated fires or indiscriminate cutting or grazing, and these, unless artificially planted, will never become reforested. The government is pressing this work to the extent of its resources, having already established about twenty-five nurseries for the production of growing stock. This number is entirely insufficient, and it would seem that here is an excellent opportunity for active cooperation by the various states concerned. If each state were to establish such nurseries as might be required for the growing of stock to replenish and reforest the national reserves lying within its borders, such work to be performed under the supervision of the state forester, it would leave the federal bureau free to use all its resources for the administration and care of the reserves.

As it is the duty of the government to encourage the development of farm lands in the West, even at the sacrifice of some timber, so in the East, where farming on a large scale is no longer profitable, it should offer every inducement to private owners of large tracts of woodland to administer them according to modern forestry methods. The federal bureau has accomplished much good in this direction by giving expert advice and instruction and even supplying materials free of charge. But the states are hampering the work of conservation by the excessive taxes that are levied on timberlands, making it unprofitable for the land owner to hold them as an investment. Such taxes, out of all proportion to land values, have done much to retard the development of economic forestry. In many European countries a small tax is levied on the land itself and the products thereof are taxed only

when harvested. Such a system, as applied to timberlands, is far more just and equitable than the methods now employed in this country. Another European custom which we would do well to adopt is that observed in certain parts of Germany where forest areas are extensive. Private owners are required to deposit the cost of replanting their land at the time of cutting the timber, and in case of failure to replant within a certain period, the work is done by the government and the deposit forfeited. This is in line with the very general policy of the German provinces to keep the total forest acreage at the same figure and to replace such lands as may be required for agriculture with newly reforested tracts. This is a wise and beneficent use of natural resources and is in strict conformity with the principle of true conservation.

Finally, let me urge the importance of educating public opinion and of guiding it in the right direction.

Civic organizations can accomplish much good among the people, not only by means of public meetings and contributions to the press, but through direct personal influence. I do not think the most earnest advocate of conservation fully realizes the value of individual effort. So also our museums can wield a mighty influence if their curators will devise methods of teaching the lesson of conservation through the medium of exhibits. A conservation exhibit has been planned for the Staten Island museum consisting of four models, on a suitable scale, showing a mountain slope in the southern Alleghenies under successive changes as a result of human interference with nature. The original forest will be seen, in miniature; then the area will be shown after the trees have been girdled, and subsequently fire-swept; and the last model will exhibit the final results of denudation, burning, and exposure to heavy rains. These models will be supplemented by colored photographs showing native wild flowers, the weeds that follow cultivation, and the vegetation that occupies recently burned tracts. These are intended to appeal to the esthetic side of conservation, just as the more realistic model will appeal to the utilitarian.

it is to be noted that liberty of expression, the most cherished feature of a popular government like our own, sometimes results in obscuring the real issue. For example, business depression and the increased cost of living have served as the foundation for attacks upon the corporations, bitter denunciations of capitalists, and ill-judged criticism of certain fundamental requirements of the Constitution. Yet those who adopt this course are either wholly silent about the tariff or deprecate a reduction of duties on the ground that the very business interests they are attacking will suffer. So also, the real issues of conservation are obscured, on the one hand, by those who demand that the country should be given over to agriculture, and on the other, by sentimentalists whose sole motto is, "Woodman, spare that tree." Forestry teaches us that the only wise course, whether viewed from the standpoint of national benefit or in the light of our own duty to posterity, is to conserve the tree until it reaches a maximum size and value; to sacrifice it then for the needs of the community, and either to replace it at once, or to cause the land upon which it has grown to yield even greater returns. Thus we make the best use of nature's gifts during our own brief lifetime, and pass them down unimpaired and even multiplied, to the wiser and better race that may henceforth rule upon the earth.

Our Forest Trees¹

CARL PHILIP DOWELL

From the time when the first settlers came to this country up to this time we have had an abundance of forest trees or immense tracts of forest lands, but now the forests are rapidly disappearing. If the indiscriminate cutting of trees keeps on as it is, we will soon have a forest famine. The most valued tree in the life of the nation is of course the forest tree. The tree standing alone in the schoolyard and along the road please the eye and cool the air with shade, but the forests where wood is growing for homes and fuel have many industries. There the litter is keeping the water to quench men's thirst, to irrigate their lands, to drive their mills, and to make the deep waters for inland traffic.

Trees serve many useful purposes in the life of man, some producing the litter so valuable for water. The litter sometimes enriches the soil; a number of trees serve the purpose of shade and ornament; the red cedar and white pine are fine trees for ship-building; some trees are good for timber. Many uses have been made of trees for the home and farm. General construction wood comes from trees like the Scotch pine and others; white pine makes good woodenware; house lumber is produced from the red pine; cabinet work comes from maple, mahogany, etc.; Norway spruce produces our paper pulp; sugar maple produces sugar, beside wood for veneering purposes. For the farm shagbark hickory produces wood for agricultural implements, white oak makes fine wood for vehicles, and locust produces suitable

¹ Essay written by a boy of thirteen and presented, together with a collection of herbarium specimens of trees, in competition for the annual prize in natural science offered by this Association to pupils in Curtis High School and awarded June 28, 1909. (See PROC. STATEN I. ASSOC. 3: 49. 28 Ap 1911.)

The publication committee has recently decided to include in the PROCEEDINGS such essays when they are deemed suitable for publication.

posts to enclose the farm. When communications by wire are desired telephone poles can be made from tamarack, cedar, and the like.

The best trees for shade are those that have a thick broad crown and dense foliage, which keeps the sun's rays from penetrating to the ground. Sometimes a shade tree is used as a nurse tree in forest plantations, as is the case with the black cherry. The basswood is a fine tree for planting along the road and about the home on account of its dense foliage and large crown. The tulip tree is an excellent tree for shade and ornament, and is especially suitable for these purposes where bituminous coal is used. Many other trees are used for shade and ornamental purposes. Some of these are the Norway spruce, black cherry, maples, basswood, elm, box elder, beech, poplar, sassafras, white and red oak, horsechestnut, hemlock, sweet gum, ash, and hickory. The Norway spruce grows rapidly, thus its use for shade. The honey locust makes an excellent street tree and its use for this purpose in western towns is increasing. The luxuriant foliage and rapid growth render the elm suitable for planting in parks and along roadsides. As a lawn and street tree the box elder is a fine tree because of its hardness. Of all our native maples the sugar maple is the best shade tree, although surpassed by the Norway maple.

For memorial purposes any tree is suitable that is sure to thrive with natural conditions, live to great age, and have good form. For these purposes the tulip tree, poplar, spruce, hemlock, maple, oak, horsechestnut, ash, black walnut, Scotch pine, etc., are suitable. For Arbor Day planting the best trees are those that grow rapidly and are suitable for growing on any land at all. A fine tree for Arbor Day purposes is the tulip tree, because it proves suitable wherever natural conditions are at all favorable, and because of the rapid growth and magnificent form at maturity, and the value of its wood. White elm grows on any soil and can endure a great deal of heat and moisture. Others well suited for Arbor Day are the Norway spruce, European larch, Scotch

pine, white pine, tamarack, cedar, chestnut, hackberry, basswood, ash, box elder, hardy catalpa, elm, white willow, black walnut, Osage orange, and coffee tree. The white pine, Scotch pine, tulip tree, elm, Norway spruce, sugar maple, red maple, white oak, red oak, ash, white birch, chestnut, shagbark hickory, and beech are about the best for Arbor Day purposes.

Trees are being cut down faster than they are replaced. The fall webworm and other insects are doing great damage, and in a few years many of our forest trees will disappear if we do not protect them, restore the birds and destroy the insects. We may help to do so by killing off the English sparrow and by taking special precautions against the insects. This also applies to our shade trees. Fire is a great enemy of the forest, but it can be partly prevented by piling up the brush, by thinning growths of trees, and by clearing trees from the vicinity of railroads. When the trees are cut down a sufficient number of trees should be planted to replace them. But in the first place the trees that are growing should be preserved if possible.

In the PROCEEDINGS OF THE STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES, Vol. I, page 107, it reads that a committee was appointed to report on the subject of destruction of our native vegetation and to suggest any measures to preserve the plants. So far, nothing further has been done. If no more interest is taken to preserve the little patches left, the woods of Staten Island are doomed to destruction. Extensive cutting of our forest trees has been going on recently on Staten Island; for example, along Bradley Avenue, South Avenue, Darcey's woods, New Springville, and Richmond. If this destruction be allowed to go on, the beauty of our Island will be destroyed and it will be a much less desirable place for living. Much can be done to preserve street and forest trees by appointing watchmen to guard against fires and in every way preserving the trees we have. One of the precautions that could be taken would be to have the electric power for cars underground instead of overhead.

We have no large parks on Staten Island, but we ought to have

a large and natural park, and now would be the best time for obtaining such a park, before all the natural forests are gone. New York City has its Central Park and Bronx Park, Brooklyn has its Prospect Park and others, but what has Staten Island? Silver Lake Park is very small in comparison with the others, since it extends only about one hundred feet west of the lake. If we had all the woodland adjoining the lake we would have at least one respectable park. What we need to do on Staten Island is not to try to plant trees on cleared tracts of land, but to try to preserve our magnificent tracts of woodland before they are cut down.

“What does he plant who plants a tree?
He plants the friend of sun and sky;
He plants the flag of breezes free;
The shaft of beauty, towering high;
He plants a home to heaven anigh
For song and mother-croon of bird,—
In hushed and happy twilight heard—
The treble of heaven’s harmony—
These things he plants who plants a tree.

“What does he plant who plants a tree?
He plants cool shade and tender rain,
And seed and bud of days to be,
And years that fade and flush again;
He plants the glory of the plain;
He plants the forest’s heritage;
The harvest of a coming age;
The joy that unborn eyes shall see—
These things he plants who plants a tree.

“What does he plant who plants a tree?
He plants, in sap and leaf and wood,
In love of home and loyalty,
And far-cast thought of civic good—
His blessing on the neighborhood
Who in the hollow of His hand
Holds all the growth of all our land—
A nation’s growth from sea to sea
Stirs in his heart who plants a tree.”

Records of Meetings

REGULAR MEETING, OCTOBER 15, 1910

The meeting was held in the Museum, Borough Hall, New Brighton, President Howard R. Bayne in the chair, and fifteen persons present.

The minutes of the annual meeting of May 21, 1910, were read and approved.

The committee appointed to award the annual prize in natural science, offered by the Association to pupils in Curtis High School, made the following report:

The subject for competition during the schoolyear 1909-10 was "a collection of not less than fifty Staten Island insects of economic importance, including at least twenty-five species," with a brief statement of the special economic interest attaching to each species.

Two collections were submitted in competition. While neither of these was quite up to the requirements of being confined to "insects of economic importance" or in being completely labeled in accordance with the prescribed conditions, the committee decided that the collection submitted by Louis H. Achilles was deserving of the prize, in view of the diligence shown in having made a collection of specimens far in excess of the required number, and in the care shown in mounting them.

The prize was, therefore, awarded to Master Achilles.

The subject and conditions determined upon for the year 1910-11 are:

Subject

An essay of not less than 1,000 words, giving an account of some Staten Island brook, and describing (1) its source, (2) its geographic course, (3) the character of the country through which it flows, (4) discussion of special physiographic features, such as erosion, rapids, falls, etc., (5) fauna and flora observed along its course, (6) historical facts, if any, connected with it.

Conditions

The essay should be neatly written in ink, on one side of the paper only, not rolled or folded, and must be handed to the principal of Curtis High School on or before June 1, 1911.

Note

The committee reserves the right to retain any essay which it may deem suitable for publication.

CHARLES L. POLLARD,
WILLIAM T. DAVIS,
HARRY F. TOWLE,
Committee.

Dr. Arthur Hollick read a paper on Changes and Inconsistencies in the Spelling of Local Place Names by the United States Geological Survey (printed in full in this issue, p. 109), and offered the following resolution, which was adopted:

Resolved, that the Board of Trustees be requested to instruct the publication committee to preserve, as far as possible, the origin and meaning of local place names in the spelling of the same, wherever any such names may appear in any of the publications of the Association, and to adopt a uniform code of nomenclature for all such names in all papers submitted for publication.

The curator-in-chief called attention to the fact that the Association was represented in the City Budget Exhibit and urged the members to visit the exhibit.

The secretary made a brief report on the instalation and arrangement of the material representing the Association.

SCIENTIFIC PROGRAM

Mr. William T. Davis exhibited specimens and read a paper entitled Miscellaneous Observations on the Natural History of Long Island, N. Y. (Printed in full in this issue, p. 113.)

Dr. Arthur Hollick exhibited a note, written and signed by Aaron Burr, which reads as follows:

NYork 8 Nov. 1803	
W ^m P. Van Nefs Esq ^e	
Pay John L. Tillinghast Two hundred	
and thirteen dollars and charge the same to	
	—your obt—
Doll ^s 213—	A, Burr
Recd the above in full	
	John L. Tillinghast
New York Nov. 8—1803—	

[indorsed]

A. Burr drft in
favor of Tillinghast

In connection with the note Dr. Hollick presented the following memorandum:

This document came into my possession in a somewhat peculiar manner. At the Buffalo meeting of the American Association of Museums, last summer, one of the sessions was held at the Museum of the Buffalo Historical Society. I happened to be conversing with Dr. Charles F. Millspaugh, of the Field Museum of Natural History, who casually showed me the

150 STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

document and remarked that he thought of offering it to the Buffalo Museum. I at once suggested that Aaron Burr was probably more prominently identified with Staten Island than he was with Buffalo, and that it would be a welcome and valued addition to our local historical relics.

The note was evidently made and signed by Aaron Burr and the acknowledgment of receipt by John L. Tillinghast. The indorsement appears also to be in Burr's handwriting, but may have been by someone else.

The special event of local interest in connection with Aaron Burr was his death, on September 14, 1836, in the old Continental Hotel at Port Richmond, an account of which, by Ira K. Morris, may be found in the *Staten Islander* for September 3, 1910.

Dr. Hollick also exhibited and commented upon a collection of quartz crystals, from the limonite deposits on Todt Hill, recently collected and presented to the association by Mr. Bradish J. Carroll.

Mr. L. W. Freeman exhibited and presented a peculiar perforated stone, apparently an artifact, found about four feet below the surface in undisturbed sand, in an excavation made for a sewer basin on Richmond Avenue, Arrochar.

Mr. Freeman also exhibited and presented two arrow points, collected at Mariners Harbor.

The meeting then adjourned.

REGULAR MEETING, NOVEMBER 19, 1910

The meeting was held in the Museum, Borough Hall, New Brighton, President Howard R. Bayne in the chair, and about ninety persons present.

On motion the reading of the minutes of the meeting of October 15, 1910, and the transaction of business were dispensed with.

SCIENTIFIC PROGRAM

The program for the evening was arranged by the Section of Biology.

President Howard R. Bayne introduced the speaker of the evening, Professor Henry E. Crampton, of Columbia University, who delivered a lecture on Volcanos and Their History in the South Seas.

The lecture was illustrated with stereopticon views provided by the lecturer and projected by means of a stereopticon under the management of Mr. Charles A. Ingalls.

On motion a vote of thanks was tendered to Professor Crampton for his courtesy in delivering the lecture, and to Mr. Ingalls for the use of and management of the stereopticon.

The meeting then adjourned.

REGULAR MEETING, DECEMBER 17, 1910

The meeting was held in the museum, Borough Hall, New Brighton, President Howard R. Bayne in the chair, and about thirty persons present.

The minutes of the meetings of October 15 and November 19, 1910, were read and approved.

The President announced that the city had leased, for a term of five years, the house No. 154 Stuyvesant Place, New Brighton, for the use of the Association, and that the Board of Trustees were making the preliminary arrangements to move the museum collections and library into the new quarters as soon as possible after January 1, 1911, when the term of the lease begins.

The secretary stated that the Board of Trustees, at a meeting held on December 3, 1910, had adopted a resolution recommending that the number of trustees be increased to twenty-five and that in the event of such increase being authorized the number necessary for a quorum be increased to eight. The president explained the object of the resolution.

The following resolution amending the constitution was then submitted:

Resolved, that Article II of the Constitution be amended so as to read: The management of the affairs of the Association shall be vested in a board of twenty-five trustees, composed of twenty-three members elected as provided in the by-laws, together with the President of the Borough of Richmond and the District Superintendent of Schools in said borough for the time being, as ex officio members.

SCIENTIFIC PROGRAM

The program for the evening was arranged by the Section of Art.

President Howard R. Bayne introduced the speaker of the evening, Dr. Bruno Roselli, who delivered a lecture on Political and Religious Art in Medieval Siena, illustrated by stereopticon slides under the management of Mr. Charles A. Ingalls.

On motion a vote of thanks was tendered to Dr. Roselli for his courtesy in delivering the lecture and to Mr. Ingalls for the use and management of the stereopticon.

The meeting then adjourned.

REGULAR MEETING, JANUARY 21, 1911

The meeting was held in the St. George branch of the New York Public Library, First Vice-president William T. Davis in the chair, and twenty persons present.

The minutes of the meeting of December 17, 1910, were read and approved.

SCIENTIFIC PROGRAM

Miss Agnes L. Pollard read a paper on The Museum in Its Relation to Children.

Mr. Howard H. Cleaves read a paper on Possibilities and Limitations of Nature Study in the Public Schools. (Printed in full in this issue, p. 123.)

Mr. Charles L. Pollard related some amusing incidents in connection with children visiting the museum.

Mr. William T. Davis read a paper on The Seventeen-year Cicada on Staten Island between the Years 1894 and 1911, illustrated by specimens. (Printed in full in this issue, p. 120.)

The meeting then adjourned.

152 STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

REGULAR MEETING, FEBRUARY 18, 1911

The meeting was held in the St. George branch of the New York Public Library, First Vice-president William T. Davis in the chair, and about thirty persons present.

In the absence of the acting secretary Mr. Charles L. Pollard was elected secretary pro tem.

The minutes of the meeting of January 21, 1911, were read and approved.

SCIENTIFIC PROGRAM

Mr. Charles L. Pollard delivered an address on Conservation, the National Issue. (Printed in full in this issue, p. 128.)

Mr. Wm. T. Davis exhibited four milk snakes, *Ophibolus doliatus triangulus* Daudin, found lying dead in the road that runs along the north-erly side of St. Andrews churchyard on December 27, 1910. They had probably been killed in the cemetery and thrown into the road. One of the snakes was a trifle over 3 feet 6 inches in length, which is above the average for the species. The second one in size was 3 feet in length and the two others were smaller.

The meeting then adjourned.

Publications of the Association

I. PROCEEDINGS OF THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND

These PROCEEDINGS were printed in octavo numbers, partly in leaflet and partly in pamphlet form, from November 10, 1883, to June 3, 1905, and were included in nine volumes, separately indexed.

They may be obtained by members and patrons at \$1.25 per volume. To others the price per volume is \$2.50.

Single numbers of back volumes may be obtained at 10 cts. each, except the following, for which a uniform price of 50 cts. each will be charged:

Special No. 21, Vol. V, No. 5, March 14, 1896, "Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 56, and map by Chas. W. Leng.

Special No. 22, Vol. VII, No. 15, March 10, 1900, "Colonel Francis Lovelace and His Plantations on Staten Island." Edward C. Delavan, Jr. Pamph., pp. 33, pls. i-iv.

Special No. 23, Vol. VIII, No. 25, October, 1903, "Supplement to Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 22 and map.

Only a limited number of complete sets of the older volumes are now in stock, and orders for these will be filled in the order of application. The right is reserved to withdraw any part or numbers from sale at any time.

2. PROCEEDINGS OF THE STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

These PROCEEDINGS are printed in octavo parts, four parts to a volume. They contain the business and scientific records of the meetings of the Association and are sent free to all members and patrons in good standing.

By resolution of the Association all members and patrons may obtain back parts at 25 cts. or back volumes at \$1.00. To others the price is 50 cts. per part or \$2.00 per volume, for both current and back issues.

VOLUME I, including Title Page, Table of Contents, and Index, contains:
Part I, June-December, 1905, pp. 1-20, issued April 10, 1906.

Part II, January-May, 1906, pp. 21-69, issued July 9, 1906.

Part III, October-December, 1906, pp. 71-92, issued April 17, 1907.

Part IV, January-May, 1907, pp. 93-136, issued September 20, 1907.

VOLUME II, with Title Page, Table of Contents, and Index, contains:

Part I, October 1907-January 1908, pp. 1-46, issued October 17, 1908.

Part II, February-May, 1908, pp. 47-124, issued September 30, 1909.

Part III, July 1908-February 1909, pp. 125-177, issued August 18, 1910.

Part IV, March-May, 1909, pp. 179-251, issued September 16, 1910.

VOLUME III, Part I, October-December, 1909, pp. 1-56, issued April 28 1911.

Part II, January-May, 1910, pp. 57-108, issued May 2, 1911.

The Act of Incorporation, Constitution and By-Laws, etc. (Pamph., 8vo, pp. i-xxv, 1906) and the special "Memorial Number," issued in commemoration of the celebration of the 25th anniversary of the organization of the Natural Science Association of Staten Island (Pamph., 8vo, pp. i-xxxviii, 1907), will be sent free on application.

3. THE MUSEUM BULLETIN

Monthly octavo leaflets, containing official notices of meetings of the Association and descriptive items concerning the Museum exhibits. Begun in August, 1908. Current numbers sent free on application. Back numbers 2 cents each.

Checks should be made payable to the Staten Island Association of Arts and Sciences, and all remittances and communications addressed to

The Staten Island Association of Arts and Sciences.

New Brighton, N. Y.

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Assistant Curator

Howard Henderson Cleaves

Museum Assistant

Miss Agnes L. Pollard

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In charge of the Museum Assistant

PROCEEDINGS
OF THE
STATEN ISLAND ASSOCIATION
OF
ARTS AND SCIENCES

EDITED BY

PHILIP DOWELL, ARTHUR HOLLICK, WILLIAM T. DAVIS

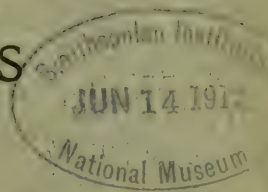
PUBLICATION COMMITTEE

CONTENTS

Salt Meadow Beetles	CHARLES W. LENG	153
Additions to the Flora of Staten Island.	PHILIP DOWELL	156
Notes on Some Staten Island Ferns	PHILIP DOWELL	163
John J. Crooke: a Staten Island Naturalist	WILLIAM T. DAVIS	169
Literature Relating to Staten Island:		
List of New York Mineral Localities. Aboriginal Place Names of New York.		
Acquisition by New York City of the Larger Two Water Systems of Staten Island. The Fossil Flora of New York and Vicinity. Two Popular Articles on the Chestnut Disease. Staten Island Association of Arts and Sciences Public Museum. A New <i>Prepinus</i> from Martha's Vineyard. The Toads of the Northeastern United States. The Kingfisher at home. The Bird of the Silent Wing. Staten Island Bird Notes and Pictures. On the Affinities of the Genus <i>Yezonia</i> . The Affinities of <i>Geinitzia gracillima</i> .		
Records of Meetings		173
Annual Reports.		181
Index		183
		197

[Issued April 25, 1912]

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THE STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

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PROCEEDINGS
OF THE
STATEN ISLAND ASSOCIATION
OF
ARTS AND SCIENCES

VOL. III

MARCH-MAY, 1911

PART IV

Salt Meadow Beetles¹

CHARLES W. LENG

I desire to call attention to the salt meadows of Staten Island in connection with beetles. We have in them a locality differing from any other part of the island and therefore presumably inhabited by some insects not found elsewhere on Staten Island,—a locality as yet not greatly altered by our increasing population and likely in some parts to remain unaltered for a long time.

Some of the species which I know are to be found on the salt meadow and which I believe are peculiar to it and similar meadows in New Jersey and other parts of the Atlantic coast, are shown in this box. I may especially mention *Bembidium contractum* Say, which I have found abundantly on the sloping muddy banks of the winding creeks in the meadow. In the daytime they are hiding under rubbish, dried mud, pieces of wood, etc., and come out probably at night to hunt small prey on the banks. Other species of Carabidae are less plentiful; I have found *Clivina striatopunctata* Dej., and in J. B. Smith's list of the Insects of New Jersey about a dozen species are specially mentioned as inhabiting the salt meadows.

¹ Presented at the meeting of the Section of Biology, May 13, 1911.

Rhyphobius marinus Lec., a tiny member of the family Phalacridae, is perhaps the most abundant insect on the salt meadow, excluding mosquitoes. It is found on pieces of wood and at all seasons by sifting.

Several Rhynchophora live on the meadow. A number of *Sphenophorus*, living on the roots of the salt meadow grasses, are abundant and easily found on turning over rubbish. *Lissorhoptrus simplex* Say, a very pretty little weevil, is also not uncommon, and Smith mentions other species of *Sitones*, *Barini*, and others. It would be interesting to connect each of these with its food plant. The high tide bush (*Iva frutescens* L.) must be responsible for some of them. *Bruchus hibisci* Oliv. is found on the marsh mallow with large pink flowers. In addition to those mentioned, other beetles in Staphylinidae, Chrysomelidae, etc., are credited to the salt meadow and I hope that sufficient interest may be aroused by these remarks to cause Staten Island collectors to specially note and record salt meadow insects with ecological data.

The following references to Staten Island beetles may be recorded in our PROCEEDINGS:

Conurus imbricatus Casey, Staten Island type locality.

Oligomerus obtusus Lec. and *Petalium seriatim* Fall are both mentioned in Fall's monograph of the Ptinidae as occurring on Staten Island.

Philhydrus hamiltoni Horn by its name recalls the labors of the late Dr. John Hamilton on the Brigantine marshes and seems to be peculiar to such localities. I have taken other water beetles on the meadows and especially in the pools locally called salt holes, but I hardly think they are other than accidental inhabitants of the meadow.

Bryaxis abdominalis Aubé, its name suggesting the remarkable sculpture of the abdomen above in the males, was described from the salt meadows near Cambridge, Mass.; it is with us the most common Pselaphid on the salt meadow and is not found elsewhere. Early in April, on the Old Place meadow, nearly every bit of wood, bark, and other tidal refuse has one or more of these

little beetles clinging to it. Often they are found copulating. By May they are less abundant but may be found by sifting the tidal refuse. Another Pselaphid, much less common, is identified by Mr. C. Schaeffer as *Bryaxis cavicornis* Brendl., easily known by the deformed antennae of the male; and still other Pselaphidae and Scydmaenidae are reported to occur in the New Jersey meadows. They may be taken by sweeping the grasses after sunset, when crepuscular insects leave their hiding places.

Additions to the Flora of Staten Island¹

PHILIP DOWELL

The following list includes a few native plants not previously reported from Staten Island, some that have been recently recorded elsewhere but not in the publications of this Association, and others that have already been recorded in the PROCEEDINGS or in the Flora of Richmond County,² but for which records of new localities are here given. Occasional notes are added in connection with some of the records.

NOTE.—The names of plants not previously reported in the records of the local flora of the island are designated by an asterisk. The numbers printed in italics and inclosed in parentheses are those of herbarium specimens collected by the author. The ferns proper are discussed in a separate paper. *Lycopodium* is listed first, otherwise the names appear in alphabetic order. Most of the grasses have been determined or verified by Mr. G. V. Nash, and the sedges by Mr. K. K. Mackenzie.

LYCOPODIUM LUCIDULUM Michx.

Woods west of Egbertville, Aug. 31, 1907 (5179). This is the only place on Staten Island where I have found the species during eight seasons of collecting on the island, but in 1879 it was reported as common.

Lycopodium obscurum L. is found occasionally, but it is comparatively scarce, and *L. complanatum* L. is now rare. Both of these were "common" in 1879. Neither of the other two reported in 1879, *L. inundatum* L. and *L. clavatum* L., have been seen growing on the island on any of my field trips during the past eight years.

¹ Presented May 20, 1911.

² Hollick, A., and Britton, N. L. Flora of Richmond County, New York, 1-36. 1879. Additions and New Localities, 1879; 1880-1882; 1883-1884; 1885; 1886-1889; 1890; 1891-1895.

ACHROANTHES UNIFOLIA (Michx.) Raf.

Woods near "Ketchum's Mill Pond," July 16, 1907 (5020); Bloodroot Valley woods, Aug. 13, 1907 (5080). Previously reported from New Dorp, Egbertville, Ocean Terrace, Great Kills (3587), and east of Richmond (3875).

AGRIMONIA PARVIFLORA Soland.

Egbertville, Aug. 29, 1907 (5144). Previously reported from New Dorp and Tottenville.

ARISTOLOCHIA SERPENTARIA L.³

New Springville, July 19, 1909 (5869). Previous records: "Elliot Collection" and "Tottenville (Herb. W. H. Leggett)."

ASCLEPIAS QUADRIFOLIA Jacq.

Dongan Hills, June 20, 1909 (5731). A few plants were found in this locality, in the open woods on the west side of Richmond Road, not far from the golf links.

In 1879 this was reported as frequent and in 1907 this species, like the preceding and the following, was listed by Mr. Wm. T. Davis³ among the plants probably exterminated from the island. ASTER ACUMINATUS Michx.³

Bulls Head,⁴ Sept. 14, 1907 (5207), and Oct. 1, 1910 (6621); north side of Merrell Avenue, near South Avenue, Sept. 21, 1907 (5220); south side of Merrell Avenue, near South Avenue, Sept. 19, 1909 (6042). Found also by Mr. Wm. T. Davis between Pleasant Plains and Kreischerville, Sept. 18, 1909. Previous record: "Elliot Collection."

ASTER UNDULATUS-LORIFORMIS Burgess.

Richmond Valley, Oct. 11, 1908 (5627). In 1906 it was reported from Richmond (Sept. 26, 1903, 2611).

*CAREX ANNECTENS Bicknell. (*C. setacea ambigua*.)

Bradley Avenue clearing, June 19, 1909 (5708).

CAREX CANESCENS DISJUNCTA Fernald.

South Avenue, near Lambert Lane, June 9, 1907 (4769).

³ See Davis, Wm. T. The Disappearing Wild Plants of Staten Island. Proc. Staten I. Assoc. 1: 110. 20 S 1907.

⁴ Reference was made to its occurrence in this locality in the author's The Violets of Staten Island. Bull. Torrey Club 37: 179. 29 Ap 1910.

Probably included in the list of 1880-1882 under "*Carex canescens* L. Common."

CAREX COSTELLATA Britton.

Bradley Avenue clearing, June 19, 1909 (5710). Previously reported under *C. virescens* Muhl.

CASSIA MARILANDICA L.

Palmer Avenue, Port Richmond, July 31, 1907 (5072). Reported from Eltingville, "Giffords," and Clove Lake in former records.

CHAMAEALIRIUM LUTEUM (L.) A. Gray.

Egbertville, Aug. 26, 1905 (4101); Bradley Avenue clearing, June 4, 1910 (6201). Previous records: "Court House and Linden Park."

CLEOME SPINOSA L.

Near Bodine Pond, Aug. 28, 1905 (4131). Reported from near Arlington by Dr. A. Hollick.⁵

ECLIPTA ALBA (L.) Hassk.

Mariner Harbor, Aug. 14, 1906 (4565). Previous records: "*Eclipta erecta* L. 'West Brighton.' (G. W. Wright.)" "*E. procumbens* Michx. Sparingly near Richmond." "*Eclipta alba* Hassk. Beginning to spread in waste places and gardens. (*E. procumbens* of our catalogue.)" The last record was in the list of additions, 1883-84. Evidently the plant has not spread very much, for I have found it only once on the island.

*EUPATORIUM MACULATUM L.

Reed Swamp, Sept. 20, 1903 (2517); Palmer Run, Sept. 11, 1904 (2997); South Beach, Sept. 11, 1904 (3384). This is the common Joe-Pye weed on the lowlands.

*EUPATORIUM SEROTINUM Michx.

A plant of this southern species was found growing in a vacant lot at the corner of Franklin Avenue and Richmond Terrace, Oct. 4, 1910 (6630).

*EUPATORIUM TRIFOLIATUM L.

Along the railroad at Arlington, Oct. 3, 1903 (2682).

⁵ Proc. Staten I. Assoc. 3: 64. 2 My 1911.

*FRAXINUS NIGRA Marsh.

Swamp at Merrell Avenue, near South Avenue, May 30, 1906 (4362), and June 24, 1906 (4383); one small tree near "Ketchum's Mill Pond Brook," June 25, 1905 (3830). In the swamp on the south side of Merrell Avenue there are a number of large trees of this black ash.

HOTTONIA INFLATA Ell.

Ditch near South Avenue, May 29, 1909 (5668). Previous record: "Mariner's Harbor. Abundant in a pond near Court House."

*HYPOPITYS AMERICANA (DC.) Small.⁶

Richmond Valley, Sept. 23, 1905 (4254); Richmond, toward New Dorp, Sept. 24, 1905 (4276); Egbertville, July 11, 1906 (4491).

*HYPOPITYS LANUGINOSA (Michx.) Nutt.⁶

South New York No. 3 (formerly Darcey's woods), Aug. 14, 1907 (5087).

ILEX LAEVIGATA (Pursh) A. Gray.

Swamp near the corner of Merrell Avenue and South Avenue, June 3, 1906 (4369), and June 24, 1906 (4382). Previously reported from near Silver Lake and Tottenville.

ILYANTHES ATTENUATA (Muhl.) Small.

Mariner Harbor, Aug. 14, 1906 (4568). Reported from Graniteville by Mr. Wm. T. Davis.⁷

INULA HELENIUM L.

Rockland Avenue, near New Springville, July 18, 1905 (3899). Previously reported from Garretson, New Dorp, and Morgan Road.

LILIUM CANADENSE L.

Bulls Head, June 26, 1908 (5323). Reported in 1879 as "rather common," but it is now rare on the island.

⁶ Both *Hypopitys americana* and *H. lanuginosa* were probably included under the name *Monotropa Hypopitys* L. in the list of 1879.

⁷ Proc. Nat. Sci. Assoc. Staten I. 8: 5. F 1901.

LILIUM PHILADELPHICUM L.

Below Ocean Terrace, July 15, 1907 (5017). In 1879 "not rare," but the species is now rare on the island.

*LYCOPUS COMMUNIS Bicknell.

Old Quarry Road, Sept. 30, 1904 (2970); Egbertville, Aug. 29, 1907 (5141). This has probably been included with *L. virginicus* in previous reports.

*LYCOPUS RUBELLUS Moench.

Egbertville, Aug. 26, 1905 (4100), and Aug. 31, 1907 (5170).
MIMULUS ALATUS Soland.

Bulls Head, Aug. 3, 1905 (3999), and Aug. 18, 1906 (4579).
Previous record: "Along a brook near Huguenot."

PANICUM HUACHUCAE Ashe. (*P. pubescens* Lam.)

Meadow at Nicholas Avenue, Port Richmond, July 5, 1905 (3864a); Bradley Avenue clearing, June 19, 1909 (5712); south of Little Clove Road, June 20, 1909 (5720). In the Additions to the Flora of Richmond Co., 1885, there appears this note under *P. nitidum*: "Also a hairy form answering to the description of *P. pubescens*, Lam."; and in Appendix No. 7, 1891-1895, *P. pubescens* Lam. is reported from Richmond Valley.

*PANICUM LINDHEIMERI Nash.

South of Little Clove Road, June 20, 1909 (5719).

PANICUM PORTERIANUM Nash.

Ocean Terrace, June 20, 1909 (5722). *P. latifolium molle* Vasey has been reported from New Dorp.

PENTSTEMON DIGITALIS (Sweet) Nutt.

Woods at Great Kills, Nov. 9, 1907 (5296). Previously reported from New Dorp and West New Brighton.

SAXIFRAGA PENNSYLVANICA L.

Bradley Avenue clearing, May 17, 1908 (5311), and May 23, 1909 (5647). Previously reported from Clove Lake,⁸ Reed Swamp⁹ (2042), and South Avenue swamp (3750).

⁸ Flora of Richmond County, New York, 13. 1879.

⁹ Proc Staten I. Assoc 7: 40 9 11 1906

SISYMBRIUM ALTISSIMUM L.

Richmond Terrace, near Nicholas Avenue, Sept. 30, 1909 (6059). This was first reported from Charles Avenue, Port Richmond,¹⁰ where a single plant was found, Aug. 14, 1905 (4029). Another plant was found at St. George in 1908, and specimens from this plant were collected and prepared for the herbarium of this Association. The species is now abundant on the waste ground at the foot of Bodine Street, opposite McAllister's shipyard. During the last season (1910) it was noticed at several other places on the north shore of the island, and it was found plentiful on the waste ground along the east shore between Stapleton and Tompkinsville.

TARAXACUM ERYTHROSPERMUM Andrz.

Roadside at Rosebank, June 15, 1909 (5705).

THLASPI ARVENSE L.

Foot of Bodine Street, May 29, 1911 (6665).¹¹ Previously reported from Clove Lake.

The following violets, beside 30 hybrids, were published in the Bulletin of the Torrey Botanical Club¹² but have not been listed in our PROCEEDINGS:

*VIOLA AFFINIS LeConte. Frequent.

*VIOLA HIRSUTULA Brainerd.

*VIOLA INCOGNITA Brainerd.

*VIOLA TRILOBA Schwein.

*VIOLA EMARGINATA (Nutt.) LeConte.

This has been found also at Oakwood, May 7, 1910 (6123); June 4, 1910 (6211); June 19, 1910 (6233); Sept. 4, 1910 (6553); and at Great Kills, Sept. 17, 1910 (6571).

*VIOLA PECTINATA Bicknell.

Found also at New Dorp, near the beach, Sept. 11, 1910 (6570).

VIOLA CONSPERSA Reichenb.

This takes the place of *V. labradorica* Schrank in our lists.

¹⁰ Proc. Staten I. Assoc. 1: 37. 9 J1 1906.

¹¹ This record has been added after the meeting of May 20.

¹² The Violets of Staten Island. Bull. Torrey Club 37: 163-179. pl. 11-18. 29 Ap 1910.

VIOLA ERIOCARPA Schwein.¹³

This should be recorded instead of the name *V. scabriuscula* (T. & G.) Schwein.

To these should be added the following new hybrids:

Viola brittoniana × *sororia*

Plant pubescent with fine spreading hairs. Rootstock thick, ascending. Blades of vernal leaves 2-4 cm. long, 1.5-3 cm. wide, ovate, mostly acute, cut-toothed or cleft, with a prominent middle lobe constituting the main part of the blade, on petioles two to four times as long; later leaves larger and wider in proportion to their length, some of the blades much wider than long and uncut; blue flowers on scapes as long as the petioles; cleistogenes prostrate or ascending, the scapes 6-15 cm. long; sepals lanceolate, two thirds to one half as long as the capsules, glabrous except on the prominent ciliolate auricles; capsules 10-15 mm. long, green or mottled with purple; seeds brown.

Bradley Avenue clearing, June 4, 1910 (6196), and July 1, 1910 (6255); transplanted and specimens collected Sept. 21, 1910 (6592), and May 13, 1911 (6660).

A colony of several plants was found at this station. Except for their pubescence, these plants are similar to *V. brittoniana* × *papilionacea* in their general appearance.

Viola emarginata × *sororia*

Plant pubescent with fine spreading hairs chiefly on the petioles and scapes. Rootstock thick, erect or ascending. Blades of leaves 3-7 cm. long, 2-5 cm. wide, irregularly toothed, especially at the base, triangular-ovate, mostly acute, base cordate to truncate, somewhat decurrent; blue flowers on scapes equaling the petioles; cleistogenes on prostrate or ascending scapes, which are about 5 cm. long; sepals lanceolate, acute, glabrous except on the ciliolate, long auricles; capsules elliptical in outline, mostly small and not well developed, slightly spotted with purple; seeds grayish brown, in size like those of *V. emarginata*.

Bradley Avenue clearing, June 4, 1910 (6194); transplanted and specimens collected again Sept. 21, 1910 (6591).

¹³ See Brainerd, E. The caulescent violets of the southeastern United States. Bull. Torrey Club 38: 194. 5 My 1911.

Notes on Some Staten Island Ferns¹

PHILIP DOWELL

Since the time of the publication, five years ago, of my paper on the Distribution of Ferns on Staten Island,² several tracts of woodland on the island have been cleared, and thus some favorite haunts of the ferns have been destroyed. This clearing of the forests for lumber and for real estate improvements was especially active during the latter part of 1906 and the first part of 1907. Among the areas cleared are Darcey's woods, now South New York No. 3; a piece of woodland on the east side of Bradley Avenue, now included in South New York No. 2; a large tract near New Springville; one west of Richmond, near "Ketchum's Mill Pond"; and another on the east side of South Avenue, adjoining the one and one-half acre tract mentioned in my former paper as being especially rich in ferns. Fortunately this little fern tract has been spared, and it still contains 24 different kinds of ferns. Boott's fern has disappeared from this area but another has been added to the list instead.

In the list of 1906 there were 32 kinds of ferns given. To this should now be added 4 hybrid ferns, which have not been previously recorded in the publications of the Association, though the records have been published elsewhere. These are designated by an asterisk before the name, in the following list of records with occasional notes.

DRYOPTERIS CLINTONIANA (D. C. Eaton) Dowell, Proc. Staten I. Assoc. 1: 64. 9 J1 1906.

Aspidium cristatum Clintonianum D. C. Eaton in A. Gray, Man. ed. 5, 665. 1867.

A new record is Ocean Terrace swamp, July 18, 1906 (1509).

¹ Presented at the meeting of the Association, May 20, 1911.

² Proc. Staten I. Assoc. 1: 61-67. 9 J1 1906.

**DRYOPTERIS CLINTONIANA* \times *GOLDIANA* Dowell, Bull. Torrey Club 35: 137. 20 Ap 1908.

D. Goldieana celsa Palmer, Proc. Biol. Soc. Wash. 13: 65. 1899.

South Avenue swamp, west of the fireworks factories at Bulls Head, Oct. 9, 1904 (3558). This locality is the one and one-half acre tract referred to before. A specimen of this collection was designated as the type in connection with the description of the hybrid. One plant of the original clump of two was taken home and transplanted July 25, 1907. This plant has been slow in establishing itself in our small city lot, but it has by this time become a robust plant and has afforded favorable opportunities for observation and for comparison with the other plant still growing in its native place.

**DRYOPTERIS CLINTONIANA* \times *INTERMEDIA* Dowell, Bull. Torrey Club 35: 136. 20 Ap 1908.

A single plant at Bulls Head, Aug. 3, 1905 (3995); woods west of Egbertville, Aug. 17, 1905 (4049), also a single plant.

DRYOPTERIS CRISTATA \times *INTERMEDIA* Dowell, Bull. Torrey Club 35: 136. 20 Ap 1908.

Aspidium Boottii Tuckerman, Hovey's Mag. 9: 145. 1843. South New York No. 3 (formerly Darcey's woods), Sept. 19, 1908 (5571).

The first known record of Boott's fern on Staten Island³ is that of Nov. 14, 1903 (2805), when a single clump of the fern was found in the South Avenue swamp, west of the fireworks factories. Another plant was found a few rods farther east May 30, 1906 (4357), but this disappeared before the end of the year. The last record for Boott's fern in this swamp is that of June 23, 1907 (4814), when specimens were collected from the original clump. At that time a small tree, at the base of which the fern was growing, had been felled, and when search was made for the fern on several occasions later, the plants had disappeared. It may be well to recall in this connection that in the spring or

³ Proc. Nat. Sci. Assoc. Staten I. 9: 2. N. 1903.

winter preceding that time a large adjacent piece of woodland had been cleared, and this may have helped to kill the fern by changing the conditions of moisture.

The Bradley Avenue locality has been destroyed, but some plants of Boott's fern may still be found there, struggling to keep alive. The fern is still to be found in the other localities previously reported.

The so-called variety *multiflora*, which is a misnomer, is a robust and thickly fruiting form, sometimes found on plants that may produce ordinary fronds during a less favorable season or under less favorable conditions. One robust plant growing exposed to the sunlight but with plenty of moisture, at the base of an old tree stump, had "*multiflora*" fronds when first found, in the Bradley Avenue locality, July 3, 1905 (3838), but during the next two seasons this same plant produced very ordinary fronds. After the surrounding trees had been cut down, this plant was taken home and transplanted, Sept. 12, 1907. During the succeeding three seasons that have passed since then, this plant has appeared just like another plant of Boott's fern, which had been transplanted July 3, 1905, from the same locality and taken for an ordinary form, if it may be so called.

The preceding fern, *D. clintoniana* \times *intermedia*, also produces large and unusually heavily fruited fronds under favorable conditions, and these fronds would also answer to the description of Gilbert's variety *multiflora*. In this case, too, it is a heavily fruited form, the fronds not necessarily larger than usual, though often so.

DRYOPTERIS CRISTATA \times MARGINALIS Dav. Bot. Gaz. 19: 497.
1894.

This was found near Bulls Head Aug. 3, 1905, but no specimens were taken on account of the absence of fertile fronds. The following year a specimen was collected from this plant. Aug. 18, 1906 (4574). Another new locality is the woodland west of Egbertville, where the fern was found at two different places; one along an old stone fence, June 9, 1906 (4374), and

the other a number of rods farther west, along the brook in that locality, July 13, 1907 (5011).

There are still several clumps of this fern in the South Avenue swamp, from which it was first reported⁴ (2760, Oct. 31, 1903).

**DRYOPTERIS CRISTATA* \times *SPINULOSA* (Milde) C. Chr. Ind. 259. 1905.

Aspidium cristatum \times *spinulosum* Milde, Nova Acta 26: 533. 1858.

Ocean Terrace swamp, Aug. 2, 1905 (3994a), and July 15, 1907 (5013); Bulls Head, June 10, 1906 (4380a), and July 24, 1907 (5053). These have been transplanted and kept under observation at home.

DRYOPTERIS GOLDIANA (Hook.) A. Gray, Man. ed. 1, 631. 1848.

Aspidium Goldieanum Hook. Edinb. Philos. Jour. 6: 333. 1822. Grasmere, June 26, 1910 (6249). One of the two localities near New Springville previously reported⁵ for this fern has been destroyed by the cutting down of the woods, otherwise it is still found growing in the other localities reported. The first known record for Goldie's fern on Staten Island is that of Oct. 31, 1903 (2757), when it was found in the South Avenue swamp.⁶

DRYOPTERIS INTERMEDIA \times *MARGINALIS* Benedict, Bull. Torrey Club 36: 48. 29 Ja 1909.

Found growing on a stone fence near brook east of New Springville, Nov. 27, 1904 (3622),⁷ and reported as *D. pittsfordensis* Slosson in the Proc. Nat. Sci. Assoc. Staten I. 9: 42. Mr 1905. It was still included as *D. pittsfordensis* in my account of the ferns of the island presented at the meeting of the Association in May 1906, although the glandular character of the in-

⁴ Proc. Nat. Sci. Assoc. Staten I. 9: 8. Ja 1904.

⁵ Proc. Staten I. Assoc. 1: 64. 9 Jl 1906.

⁶ Proc. Nat. Sci. Assoc. Staten I. 9: 2. 1903.

⁷ This locality was destroyed by the felling of the surrounding trees during the winter of 1906-1907. On June 1, 1907, when the locality was visited, the plant had fallen down with the rocks and was almost destroyed. It was then taken home and transplanted and has gradually regained its vigor, as shown by a specimen collected Oct. 1, 1909 (6060½).

indusia had been recognized as a distinguishing mark between this fern and the type specimens of *D. pittsfordensis* in the herbarium of the New York Botanical Garden.

The validity of this distinction was emphasized when I had the opportunity of examining another specimen with glandular indusia, similar to the New Springville plant. This specimen had been collected by Mr. R. C. Benedict near Solvay, N. Y., Aug. 9, 1905, sent by him to Professor L. M. Underwood, and by Professor Underwood submitted to me for identification. In spite of the recognized differences between the type specimens of *D. pittsfordensis* and this specimen, it was then identified as *D. pittsfordensis*, in accordance with Professor Underwood's treatment of our common American wood fern with glandular indusia as a variety of *D. spinulosa* instead of as a recognized species, *D. intermedia* (Muhl.) A. Gray. The validity of the distinction was further established when I found, on Staten Island, Aug. 17, 1906 (4570), a live plant similar to the type specimens of *D. pittsfordensis* and differing from the New Springville plant in its general appearance and smooth indusia.

This was another link in the chain of associations that led to the conviction that these ferns are the representatives of two sets of hybrids, one with *D. intermedia*, and the other with *D. spinulosa*. Moreover, it served to establish the conviction that our common American evergreen wood fern with glandular indusia is fully entitled to specific rank and that we should follow Muhlenberg and Gray in recognizing it as such.

**DRYOPTERIS MARGINALIS* \times *SPINULOSA* Slosson, Bull. Torrey Club 36: 49. 29 Ja 1909.

D. pittsfordensis Slosson, Rhodora 6: 75. f. 1. 6 Ap 1904.

Woods east of Bradley Avenue, in a small wet depression, Aug. 17, 1906 (4570). This is the plant referred to under *D. intermedia* \times *marginalis*. There were, in fact, two plants growing side by side, but one of them was small and undeveloped and was not at that time identified with certainty. The older plant was transplanted at Port Richmond on September 2 of the same

year and has been doing well. The original locality was cleared during the following winter and converted into a city lot, and the smaller plant was found with difficulty the next summer. This, too, was taken home and transplanted, and has established its identity as this same hybrid.

WOODWARDIA VIRGINICA (L.) J. E. Sm.

Pond at the corner of Ocean Terrace and Todt Hill Road, Oct. 4, 1908 (5626); woods west of Great Kills, Sept. 11, 1910 (6577).

Beside the one and one-half acre plot previously mentioned and the adjoining woodland of which it forms a part, there still remain on Staten Island a few other forest tracts that have been left comparatively undisturbed and are favorable to the growth of certain ferns characteristic of moist woodlands. Among these may be mentioned: the upper part of the valley on the south side of Ocean Terrace and on the east slope of Todt Hill; the woods west of Egbertville, a portion of which has not been destroyed; the woods adjoining the brook between "Ketchum's Mill Pond" and the present dam; a tract north of this, toward New Springville, adjoining the New Springville area previously mentioned as having been cleared during the winter of 1906-1907; the Bulls Head woods; and the forest near the corner of Merrell Avenue and South Avenue.

So, in spite of the continual destruction of our forests, Staten Island can still offer to the lover of nature some deep woodland retreats, where he may roam in peaceful enjoyment of nature and revel in the profusion of its forms of life, forgetting for the time the turmoil and strife of other parts of the great city of which these woodlands form a part. It would be fortunate, indeed, if these would be preserved to posterity.

John J. Crooke: a Staten Island Naturalist¹

WILLIAM T. DAVIS.

Mr. John J. Crooke died April 22, 1911, at his home, which overlooks Great Kill, Staten Island, and was buried at Poughkeepsie, N. Y. He was born January 22, 1824, at Stuyvesant, Columbia Co., N. Y., on the banks of the Hudson, not far north of the place where he was buried. Long ago he came to Staten Island and purchased a large tract of land on the "south side," including the one-time point, but now an island, that bears his name. He has told the writer that when he first came to the island there was a forest over much of his land. He made the clearing for the house and had a fire-proof room built with brick-arched ceiling and iron doors for his natural history collections. Some of these collections were acquired by purchase, and they included the Meisner herbarium and the Chapman herbarium of southern plants, which were given to Columbia College and finally found a resting place in the New York Botanical Garden. They included also a large collection of land shells, now the property of the American Museum of Natural History, and many minerals and other objects collected during his extended travels in Colorado and the west, where at one time he owned silver mines.

The writer made several visits to this living room and museum, where cases of birds, plants, and other natural history material were numerous, where a specimen of the now probably extinct passenger pigeon sat on top of a bookcase, and where Mr. Crooke had a lathe and other mechanical appliances. He told us that he had made a clock some years before and that it was still running at the time of our visit. There were many pictures of shells about the room, and a medallion of Dr. John Torrey, who with Peter Le Roy, the botanist, had the first care of the botanical col-

¹ Presented May 20, 1911.

lections donated by Mr. Crooke to Columbia College. He told us of the pitcher plants that he used to find in the swamp near his home. At the time of our visit the grounds about the house were very attractive to the eye of a naturalist, for he had let many little thickets grow up, as of much interest to him and as a shelter to the birds. He told us that quail used to nest in the orchard and that he got into much trouble trying to protect the birds in former days. One time, when he ordered a gunner out of his place, the desperate man was going to shoot him, and he stood looking into the barrels of his gun for a minute or more, expecting the man to pull the trigger.

Many smugglers used to frequent the lonely beach, and Mr. Crooke once saw and went on board of a brig lying in Great Kill that had a piece of canvas nailed over her name. When he visited the vessel, there were only a man and a dog on board. The brig disappeared the following night.

When Joseph Brown lived on the point, for it was once called "Brown's Point" or the "Beach of Sand," a man knocked at his door one night and said he had business with him. He asked if what he told Brown would be kept a secret. Brown said that it would, but the stranger insisted upon swearing him on the family Bible. The visitor then said that a number of boxes of arms were to be brought to the point, and he asked Brown where they had best be hidden. Brown suggested that they be put under a dilapidated old building, and the stranger departed. After some days a schooner appeared off the beach, and in the night the boxes were brought ashore and deposited as agreed. They stayed there some time, and were again moved in the night. They were probably used in some of the disturbances in Cuba. Brown received a pair of ivory-handled revolvers for not mentioning the fact that the boxes were stored on the point.

The place where Brown lived was afterward used as a clubhouse, and because of some disagreement between the clubmen and the natives the house was set on fire, and now only the hole in the ground, where the foundation was, remains.

On one occasion Mr. Crooke was having a gun constructed by an expert. Audubon's grandson happened in and seeing the new gun asked for whom it was being made. He was told of Mr. Crooke and his amusements and hobbies and remarked that he had his grandfather's gun. Mr. Crooke, hearing of this, expressed a wish to secure a photograph of the gun, but the younger Audubon said that if Mr. Crooke would have a gun built for him like the one being made, he would give his grandfather's gun in exchange. This was done and Mr. Crooke paid \$300.00 for the new gun. In later years he was afraid that the Audubon gun might be lost, and so he presented it to the American Museum of Natural History, where it is at present on exhibition.

Mr. Crooke was also instrumental in finding the original plates of Audubon's great work on birds, now in the American Museum and elsewhere. Mr. Crooke himself had one of these plates hanging below the medallion of John Torrey above his mantel in the fire-proof room. Being interested in mines and manufacturing, he became acquainted with Mr. Phelps, whose shops were at Ansonia, Conn. Mr. Phelps one day told Mr. Crooke that he had bought a lot of plates as scrap, and as they contained figures of birds he might be interested in them; they were up on the second floor and he had better go and look at them. It did not require much of an examination to show that they were the plates of the large edition of Audubon's birds. Some of the plates had been scored across the face, thus destroying the figures more or less, but many others were in good condition. Mr. Crooke told Mr. Phelps of his discovery and asked to be allowed to purchase some of the plates. This he did, paying the price of scrap copper. He took them off, under his arm, as many as he could carry, and had them cleaned and rubbed with nickel and gold dust, which brought out the figures. He then told Mr. Phelps what he had done, and upon learning that the plates could be so restored, Mr. Phelps sent the remaining perfect ones and had them treated likewise. Those that had been scored on the face Mr. Crooke thought went into the smelter, which is much to be regretted. Later, Mr.

Phelps gave at least some of his plates to the American Museum, and Mr. Crooke also gave away some of those he first selected.

When Mr. Crooke was in the manufacturing business he was invited to call on Mr. Thomas A. Edison and see if he could not suggest some material that would do for his phonograph cylinders. Mr. Edison asked him to step out of the room for a moment while he repeated a few words to the phonograph, then upon his return see if he could tell what he had been saying. While he was outside he heard Mr. Edison repeating, "Mary had a little lamb." Upon his return the machine was worked backward and Mr. Crooke repeated "Mary had a little lamb," which greatly pleased Mr. Edison until Mr. Crooke told him what he had heard. So a new trial was made, and Mr. Crooke went to a much greater distance but only to hear Mr. Edison, who talked louder than he thought, repeat: "If I were a cassowary on the plains of Timbuctoo." It was of no use, the machine did not work then as it should, and Mr. Crooke tried many things in the way of metals out of which cylinders might be made. It was not until some time after, that the idea of the mixture of hardened wax, etc., was perfected.

Mr. Crooke was a most interesting narrator of his many experiences and possessed a retentive memory and a great store of exact knowledge on a wide range of subjects. He entertained us for many hours with stories of the hostile Indians that at one time frequented the vicinity of Crookeville in Colorado; with the scenes of his boyhood days along the Hudson River; and with accounts of the great flocks of the wild passenger pigeons, which are no more.

Literature Relating to Staten Island

LIST OF NEW YORK MINERAL LOCALITIES¹

This list is arranged alphabetically by counties, and the localities in the same manner in each county. Accompanying the locality names are lists of the minerals reported as occurring there, together with references to the authorities quoted. The latter are included in a bibliography of 231 numbers.

Richmond County is mentioned on page 72 in a very incomplete enumeration of both localities and minerals. The diabase rock and its associated minerals are entirely ignored, and those of the serpentine area are included in a list of only twelve species. Inasmuch, however, as the bibliography contains only one reference to our PROCEEDINGS it is evident that the author's search for information was not very exhaustive.

A. H.

ABORIGINAL PLACE NAMES OF NEW YORK²

In this bulletin the localities for which Indian names are known are conveniently grouped under each county in the state, and the counties are arranged in alphabetical sequence. An index of all the names and localities mentioned is also included, so that reference may be quickly made either to place or name.

Richmond County appears on page 186, where a list is given of the many different names under which Staten Island was known at various times. "Aquehonga" is stated to be the Anglicized form of the Delaware "Achwowangeu," meaning "high sandy banks," and the name "Aquehonga Manacknong" to mean "the island with high sandy banks," probably in reference to the

¹ H. P. Whitlock. N. Y. State Museum Bull. 70 (Mineralogy 3), 8vo pamph., pp. 108, Albany, N. Y., 1903.

² Wm. M. Beauchamp. N. Y. State Museum Bull. 108 (Archeology 12). 8vo pamph., pp. 333, Albany, N. Y., 1907.

favorite camp and village sites at Mariner's Harbor, Watchogue, and Tottenville. "Eghquaons" is said to be the Dutch form of the word.

Matanucke and Matawucks are also cited as early names for the island, meaning "land of periwinkles."

De Vries is quoted as calling it "Monocknong" and the Indians "Monatons," or "islanders." Schoolcraft is quoted as interpreting the former word to mean "ironwood place" instead of "island place," which interpretation the author regards as erroneous.

The final paragraph will, perhaps, appear somewhat inconclusive to those who are familiar with the locality mentioned, viz.: "Wat-chogue has sometimes been written Watch Oak, and is a notable hill on this island. If an Indian name, as is probable, it would be from wadchu, a *hill*, adding the locative. Tooker defines Watchogue elsewhere as *hilly land*, which suits this place."

Incidental references to Staten Island may also be found on pp. 99 and 243.

A. H.

ACQUISITION BY NEW YORK CITY OF THE LARGER TWO WATER SYSTEMS OF STATEN ISLAND³

This is a reprint, in octavo pamphlet form, of a paper presented at the twenty-ninth annual convention of the American Water Works Association. It includes brief references to the topography and geology of Staten Island and a detailed account of the estimates made in arriving at a basis of the valuation of the plants of the Staten Island Water Supply Co. and the Crystal Water Co., when the city decided to acquire them. The illustrations include pictures of the several pumping stations at West New Brighton, Brighton Heights, Bull's Head, New Springville, Grant City, and in the Clove Valley; views of the reservoirs on Fort Hill and near Four Corners; and the water tower on Grymes

³Louis L. Tribus. Proc. Amer. Water Works Assoc. 1909: 557-579. f. 1-10 + map.

Hill. The map is designed to indicate the most prominent features of the surface geology, the principal centers of population, and the areas of the several drainage basins (erroneously designated as "water sheds"), with the direction of flow in each.

A. H.

THE FOSSIL FLORA OF NEW YORK AND VICINITY⁴

This paper consists of a review of the history of the discovery of the first fossil plant remains in the vicinity of New York and the subsequent field work which resulted in the discovery of similar remains on Staten Island, Long Island, and in New Jersey, and a brief description of the arrangement of the specimens in the paleobotanical museum of the New York Botanical Garden.

A. H.

TWO POPULAR ARTICLES ON THE CHESTNUT DISEASE⁵

It may be recalled that the chestnut disease, due to the fungus *Diaporthe parasitica* Murrill, was described and discussed at the October meeting of the Association in 1908 (Arthur Hollick and Wm. T. Davis, PROC. STATEN I. ASSOC. 2: 125-129). Since that time the devastation wrought by the fungus has attracted so much attention that it has reached the stage of general interest, and a number of popular articles on the subject have appeared in magazine and newspaper literature, occasionally with incidental reference to Staten Island.

A. H.

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES. PUBLIC MUSEUM⁶

This number of the bulletin consists of a Directory of American Museums of Art, History and Science, compiled by Paul

⁴Arthur Hollick. Journ. New York Bot. Gard. 11: 15-19. f. 6. 1910.

⁵The Passing of the Chestnut Tree. Bailey Millard. Munsey's Mag. 758-765. Six figures in text. S 1910. New York Times, Oct. 2, 1910, with map of the infected area and illustrations of devastated woodlands and of the fungus.

⁶Bull. Buffalo Soc. Nat. Sci. 10¹: 197-199. 1910.

Marshall Rea, secretary of the American Association of Museums. The scope of the directory includes institutions throughout the United States, Canada, Bermuda, Mexico, Central America, and South America. The statistics of our Association make an excellent showing in every way except in regard to material on exhibition. In this respect our lack of space for the display of specimens is strikingly apparent and forcibly demonstrates our need of larger quarters. For example, the minerals in storage number $2,500 \pm$ and those on display, 150; shells in storage, $2,200 \pm$, and on display, 260; archaeology and ethnology, $15,500 \pm$, only a few of which are on exhibition; and botany, with a very valuable herbarium, practically unrepresented in the display collections. With few exceptions all of our specimens are identified and properly labeled or numbered, so that any or all of them could be placed on exhibition at any time, with full descriptive data, whenever adequate facilities be at our disposal.

A. H.

A NEW PREPINUS FROM MARTHA'S VINEYARD⁷

In this paper the author describes and illustrates a new species of ancestral pinaceous remains, from the Cretaceous clay at Gay Head, Martha's Vineyard, under the name *Prepinus viticetensis*, and discusses at considerable length its affinities with *Prepinus statenensis* from the Kreischerville clays. Specimens of the latter species are depicted in FIG. 1 and 2, PL. 33. The local interest attaching to this discussion is naturally enhanced by the fact that the type of the genus is represented by a Staten Island specimen, collected some four years ago, described by Dr. Jeffrey in *Annals of Botany* 22: 207 pl. 13, f. 1. 1908 (see reviews in *PROC. STATEN I. Assoc.* 2: 99. 1908).

The arrangement of the text is not quite as faulty as that of which the author has been occasionally guilty heretofore, but it is characteristically careless and shows an indifference to clear-

⁷ Edward C. Jeffrey. *Proc. Boston Soc. Nat. Hist.* 34: 333-338. pl. 33. J1 1910.

ness of expression and logical arrangement which is difficult to understand and impossible to excuse.

A. H.

THE TOADS OF THE NORTHEASTERN UNITED STATES⁸

In this communication the authors give an account of the distribution, within the region indicated, of *Bufo americanus* and *B. fowleri*, with descriptions of the characters denoting specific differences between them. The only Staten Island toad recognized is stated to belong to the latter species, as previously noted by Mr. Chapin in our PROCEEDINGS 2: 227. The authors touch upon the question of specific or varietal differences, with a hint at possible hybridity, and end the discussion with the following interesting note: "A male American toad, during the spring of 1909, which was put in a cage with some frogs, was later found clasping a female pickerel frog (*Rana palustris*), to which he clung for several days. Would not such an individual, if unsuccessful in securing a mate of his own species, be quite likely, a little later, to fertilize the eggs of a female Fowler's toad?"

A. H.

THE KINGFISHER AT HOME⁹

This is an article in which our Association may justly feel a proprietary interest, as representing the work of one of its members, both in the text and in the illustrations. The colored cover design is adapted from a photograph by Dwight Franklin showing a kingfisher in flight, just as it was leaving its hole.

For some reason, perhaps to avoid publicity, the locality where the observations were made and the photographs taken is not mentioned; but those of our members who were privileged to hear Mr. Cleaves' lecture and to see his lantern slides, will recognize the bluff on the shore at Prince's Bay, with all the details of the bird's flight, its hole in the bank, and the methods em-

⁸ W. de W. Miller and James Chapin. Science II. 32: 315-317. 1910.

⁹ Howard H. Cleaves. Country Life in America 18: 333-335 + nine text figures. Jl 1910.

ployed in taking the pictures, as he described them to us so delightfully.

This article should be an incentive to the Association to provide the means for illustrating our PROCEEDINGS in a similar manner when suitable papers are submitted for publication.

A. H.

THE BIRD OF THE SILENT WING¹⁰

Under the above title the author has written one of his interesting bird articles, dealing with his observations on the owls of Staten Island. The illustrations, reproduced from photographs taken by the author, may be recalled as having been shown at meetings of the Association. They include young barn owls and old ones in flight, red and gray screech owls in characteristic poses, a saw-whet and a short-eared owl. The facts included in the text are for the most part familiar to us from the papers read at meetings of the Association by Mr. James Chapin (see PROC. STATEN I. ASSOC. 2: 3. 1908; and 2: 132. 1910), and it is pleasing now to have the observations and the illustrations combined, even though the article is not issued under our own auspices.

A. H.

STATEN ISLAND BIRD NOTES AND PICTURES¹¹

In Bird Lore, under the heading A New Departure for the Redwing, Mr. Howard H. Cleaves describes a change in the nesting habits of the redwinged blackbird, *Agelaius phoeniceus* (L.), on Staten Island, which he is inclined to ascribe to the ditching and draining of the salt marshes in the crusade against mosquitoes. The birds have largely abandoned their former nesting places in the marshes and have taken to the adjacent upland meadows. One illustration shows a female redwing hovering.

¹⁰ Howard H. Cleaves. Country Life in America 18: 429-432 + eight text figures. Au 1910.

¹¹ Howard H. Cleaves. Bird Lore 12: 56, 60-62, 107, 110. 1910. [See Proc. Staten I. Assoc. 3: 71, 72. 2 My 1911.]

Another is a view of a meadow, thickly covered with daisies, in which the nests were found.

A barred owl, *Strix varia varia*, in the first moments of its flight from a hollow tree, is depicted on p. 56.

The cover illustration for the May-June number is a picture of a spotted sandpiper, and the same picture is repeated on p. 107, and a bobolink, perched and in the act of singing, is the subject of an illustration on p. 110. All of the illustrations are reproductions of photographs taken by Mr. Cleaves in the vicinity of Prince's Bay.

ON THE AFFINITIES OF THE GENUS YEZONIA¹²

In this article the author discusses two genera of fossil plants described by Stopes and Fugii from the Cretaceous of Japan (*Yezonia* and *Cryptomeriopsis*. Philos. Trans. Roy. Soc. London 201B: 1-90. pl. 1-9. 1910). It may appear to be wandering rather far afield to connect Japan with Staten Island, but the author contends, and apparently with every fact in his favor, that the supposed new genus *Yezonia* is identical with *Brachyphyllum*, utilizing sections of *B. macrocarpum* Newb., from the Kreischer-ville clays, for purposes of comparison. Similarly, the genus *Cryptomeriopsis* is regarded as identical with *Geinitzia* (*Sequoia*) *Reichenbachii* (Gein.) Hollick & Jeffrey, from the same deposits (Mem. N. Y. Bot. Gard. 3: 38. 1909, reviewed in PROC. STATEN I. Assoc. 2: 205. 1909). It is certainly interesting to realize that specimens collected in Japan, carried to England, and described there as new to science, are generically and perhaps specifically identical with specimens previously collected and described from Staten Island.

A. H.

¹² Edward C. Jeffrey. Annals Bot. 24: 767-773. pl. 65. O 1910.

THE AFFINITIES OF *GEINITZIA GRACILLIMA*¹³

This is the third article of recent date, by the same author, which refers either directly or indirectly to fossil plants from the Cretaceous deposits of Staten Island. In this paper the material described and discussed was collected on the adjacent shores of New Jersey, in the vicinity of Cliffwood, but the Kreischerville material is incidentally mentioned. The author shows that the so-called *Sequoia gracillima* (Lesq.) Newb. is not a *Sequoia*, but that it belongs in the Araucarineae and should be included in the genus *Geinitzia*, hence the title of the paper which, however, should have been made to read "Affinities of the So-called *Sequoia gracillima* (Lesq.) Newb.," leaving the new combination to first appear in the text in its appropriate place.

A. H.

¹³ Edward C. Jeffrey. Bot. Gaz. 51: 21-27. pl. 8. Ja 1911.

Records of Meetings

RECEPTION, MARCH 25, 1911

An afternoon reception, in place of the regular March meeting of the Association, was held in the newly occupied museum building, No. 154 Stuyvesant Place, New Brighton, to signify the formal opening of the museum in its new quarters. About 150 persons were present.

Addresses were delivered by the president, Hon. Howard R. Bayne; Dr. William T. Hornaday, Director of the New York Zoological Park; and Mr. Louis L. Tribus, Commissioner of Public Works for the Borough of Richmond.

A dinner in commemoration of the event was held at Hugot's Hotel, St. George, in the evening, at which about eighty members and guests were present. Addresses were delivered by the president, Hon. Howard R. Bayne; the secretary, Dr. Arthur Hollick; Dr. Franklin W. Hooper, Director of the Brooklyn Institute of Arts and Sciences; Dr. Frederic A. Lucas, Curator of the Museum of the Brooklyn Institute; Dr. William T. Hornaday, Director of the New York Zoological Park; Hon. George Cromwell, President of the Borough of Richmond; Hon. William Allaire Shortt, Member of Assembly; Dr. John Q. Adams; and Mr. Edwin Markham.

REGULAR MEETING, APRIL 15, 1911

The meeting was held in the assembly room of the Museum, No. 154 Stuyvesant Place, New Brighton, President Howard R. Bayne in the chair, and about forty persons present.

The minutes of the meeting of February 18, 1911, were read and approved.

The president referred to the advisability of increasing the number of trustees of the Association and suggested, if the Association approve, that a resolution be adopted authorizing the introduction of bills in the State Legislature to amend the charter of the Association in that particular.

Voted: That the representatives in the State Legislature from this county be authorized to introduce bills amending the charter of the Association to give it power to increase the number of its Board of Trustees to twenty-five.

SCIENTIFIC PROGRAM

The president introduced the speaker of the evening, Dr. A. W. Ferris, President of the New York State Commission in Lunacy, who delivered an illustrated address on *Insanity: Its Causes and Prevention*.

On motion a vote of thanks was tendered Dr. Ferris for his courtesy in delivering the address, and to Mr. Charles A. Ingalls for the use and management of the stereopticon.

The meeting then adjourned.

ANNUAL MEETING, MAY 20, 1911

The meeting was held in the assembly room of the Museum, No. 154 Stuyvesant Place, New Brighton, President Howard R. Bayne in the chair, and twenty-five persons present.

The minutes of the meeting of April 15, 1911, were read and approved.

The annual report of the Board of Trustees, including reports of the standing committees and curator-in-chief, was read and ordered placed on file. (See pp. 183-192 of this issue.)

The annual report of the secretary was read and ordered placed on file. (See p. 193 of this issue.)

The annual report of the treasurer was read and ordered placed on file (p. 193).

Mr. Howard H. Cleaves, recorder of the Section of Biology, presented a report on the activities of the section during the year (p. 194).

Dr. John Q. Adams made a verbal report on behalf of the Section of Art, and Mr. Edward C. Delavan made a similar report on behalf of the Section of Historical Research.

The president stated that the next order of business was the election of four trustees [to fill the vacancies caused by the expiration of the terms of office of John Blake Hillyer, Philip Dowell, William Hinman Mitchill, and George Scranton Humphrey], and called for the report of the committee on nominations. The committee submitted, as nominees, the names of Bradish Johnson Carroll, Norman Stewart Walker, William Hinman Mitchill, and George Scranton Humphrey. The president asked if there were any other nominations, and no others being made, the secretary, on motion, was instructed to cast one affirmative ballot for the nominees submitted by the committee. The secretary cast the ballots as instructed and the president declared the nominees elected trustees of the Association for the ensuing three years.

On motion the president was authorized to appoint a committee of three, of which the principal of Curtis High School should be one, to award the Association's annual prize in natural science at the school.

The president reported on legislation introduced by him in the State Senate, amending the charter of the Association by authorizing the enlargement of the Board of Trustees to twenty-five members.

The president then delivered his annual address.

SCIENTIFIC PROGRAM

Dr. Philip Dowell exhibited herbarium specimens representing additions to the local flora, with memoranda and notes. (Printed in full in this issue, pp. 156-168.)

An obituary notice and biography of Mr. John J. Croke, by Mr. William T. Davis, was read by the secretary. (Printed in full in this issue, pp. 169-172.)

The meeting then adjourned.

Annual Reports

REPORT OF THE BOARD OF TRUSTEES FOR 1910-1911

The Board of Trustees held eight meetings, as follows: the annual meeting, May 28, 1910; stated meetings on October 1 and December 3, 1910, February 1 and April 1, 1911; and special meetings on November 11, 1910, February 11 and March 11, 1911.

At the annual meeting the officers of the preceding year were reelected unanimously. The rules of the Board were amended so as to provide four instead of three stated meetings during the year, to be held on the first Saturdays in October, December, February, and April.

The following active members have been elected by the Board during the year: Ralph Bainbridge, Dr. C. W. Bliss, Mrs. C. W. Bliss, Mrs. Willard A. Boyd, James W. Clawson, Mrs. L. A. Dreyfus, C. S. Egbert, Mrs. Eleanor C. Gardner, Charles G. Hine, Dr. William R. Janeway, Edward W. Lemon, Walter S. Mayer, Mrs. Charles Metcalfe, Mrs. A. J. Newbury, Miss Helen M. Oakley, John B. Pearson.

The Board records with regret the death of the following active members: John M. Carrère, Rev. Hobart Clark, Thomas O. Horton, Charles W. Hunt, Dr. Horace Patterson.

Early in June a petition signed by many prominent members of the bench and bar of Richmond County, was transmitted to the Board of Estimate and Apportionment requesting that Room 309 in Borough Hall, then occupied by our museum, be turned over to the use of the Supreme Court, and that the house at 154 Stuyvesant Place, St. George, be leased for the Association. The Board of Trustees deemed it a wise policy to take no active part in furthering this petition, but at the suggestion of various officials made application, through Borough President Cromwell, for an issue of revenue bonds in the sum of \$2,625 to cover moving, repairs, and operating expenses, on the assumption that the museum would be able to occupy the new quarters on October 1, 1910. Application was later made for a budget appropriation of \$10,020. This was referred to the budget committee of the Board of Estimate and again referred to Borough President McAneny as a subcommittee for report. A hearing was given in Mr. McAneny's office, at which the Association was represented by the president, Senator Bayne, the acting secretary, Dr. Adams, and the curator-in-chief, Mr. Pollard. The Bar Association was represented by Mr. Eugene Lamb Richards. As a result of this hearing the amount finally settled upon was \$9,000, and this sum was approved by the Board of Estimate and Apportionment. The budget was adopted by the Board of Aldermen on November 27, and negotiations for the lease of the property were then carried forward. The Association

entered into possession on January 1, 1911, the lease having been signed on December 30. After several weeks it became apparent that the pending revenue bond issue would not receive favorable consideration, and on February 3 the executive committee, which had been duly empowered by the Board to take charge of all matters relating to the transfer of the museum, voted to proceed with the necessary repairs, using as much of the budget appropriation as might remain after the necessary allotments for salaries, rent, supplies, fuel and lighting, etc., and assuming the remainder of the expense as a charge upon the Association. The contracts were in every case awarded to the lowest bidder, and only absolutely necessary work was performed. The aggregate cost was about \$1,500. The curator-in-chief was authorized to supervise the work under the general direction of the committee. Repairs were begun on February 15 and completed during the first week in March. The transfer of the museum occupied nearly six days and was completed on March 13. The Board then appointed a special committee, consisting of Mr. and Mrs. C. A. Ingalls, Mr. and Mrs. W. H. Mitchill, and Dr. and Mrs. J. Q. Adams, to make arrangements for a celebration of the reopening of the museum. This celebration, held on March 25, took the form of an afternoon reception, attended by about 150 persons. Informal exercises were held in the assembly hall, addresses being made by Senator Howard R. Bayne, Dr. W. T. Hornaday, Director of the Bronx Zoological Park, and Commissioner Louis L. Tribus, of the Department of Public Works. In the evening a highly successful dinner was given at Hugot's, attended by about eighty members and friends of the Association.

The guests were: Hon. George Cromwell, Professor Franklin W. Hooper, Dr. Frederic A. Lucas, Dr. W. T. Hornaday, Mr. Edwin Markham, Mr. Sanderson Smith, and Rev. Charles Waldron.

The following appointments to the enlarged museum staff were made: Mr. Charles L. Pollard, curator-in-chief; Mr. Howard H. Cleaves, assistant curator; Miss Agnes L. Pollard, museum assistant; Mr. Alexander Forsyth, janitor; Mr. D. M. Van Name, museum guard; and Mr. Lawrence Liedy, night watchman.

The hours during which the new museum should be open to the public were fixed at 10 a. m. to 5 p. m. daily except Sundays, thus including all holidays. The question of Sunday opening has been deferred for later consideration.

The Board tenders to the Association its congratulations on the greatly increased facilities to the museum due to its being housed in a separate, conveniently located and easily accessible building. All of which increased advantages are reflected in a large increase in the number of visitors. The exhibits are shown to much greater advantage as they are now properly grouped in the separate rooms.

The Association is also to be congratulated on its museum staff, every member of which is efficient and loyal to the interests of the Association.

J. Q. ADAMS,
Acting Secretary.

REPORT OF THE EXECUTIVE COMMITTEE

The executive committee has held ten meetings during the year, transacting a large amount of business entrusted to it by the Board. The action of the committee on the various items is recorded in the minutes, which have been duly reported to, and approved by, the Board.

J. Q. ADAMS,
Acting Secretary.

REPORT OF THE MUSEUM AND LIBRARY COMMITTEE

This committee has held several meetings for the consideration of matters of policy and museum details submitted to it by the curator-in-chief.

WM. T. DAVIS,
Chairman.

REPORT OF THE COMMITTEE ON ACCESSIONS

The committee on accessions begs to report that it has inspected all of the accessions to the museum and taken action on them.

A list of the accessions will be given by the curator-in-chief in connection with his annual report.

J. Q. ADAMS,
Chairman.

REPORT OF THE WOMEN'S AUXILIARY COMMITTEE

The activities of the women's auxiliary committee were confined to assisting the special committee in charge of arrangements for the reception at the opening of the new museum building on March 25, 1911.

ADELINE A. HOLLICK,
Chairman.

REPORT OF THE PUBLICATION COMMITTEE

The MUSEUM BULLETIN, edited by the curator-in-chief, has been issued monthly, including No. 23, June 1910, and No. 34, May 1911.

Volume II, Part III (July 1908-February 1909), including pp. 125-177, was issued August 18, 1910; Part IV (March-May, 1909), pp. 179-251, was issued September 16, 1910, and includes the volume index and title page.

Volume III, Part I (October-December, 1909), including pp. 1-54, was issued April 28, 1911; Part II (January-May, 1910), pp. 55-108, was issued May 2, 1911. Copy for the third and fourth parts of Volume III is in hand and can be prepared for printing at any time when the Association will authorize the printing.

PHILIP DOWELL,
Chairman.

REPORT OF THE CURATOR-IN-CHIEF

TO THE BOARD OF TRUSTEES,

STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES.

Gentlemen: I have the honor to submit herewith my fourth annual report as curator-in-chief, for the fiscal year ending May 20, 1911.

The event of greatest importance and most vital significance to the museum within that period was the acquisition of our new quarters. Negotiations for the transfer and for a necessary increase in the budget appropriation were begun immediately after the last annual meeting of the Association. Several months elapsed, however, before favorable action was taken by the city authorities, making it possible to conclude a lease of the house now occupied by the museum, and it was six weeks after the Association entered into possession before the needed alterations and repairs were initiated. The removal from Borough Hall was begun March 8 and concluded March 13.

It may be understood, therefore, that the record of the past year is one of preparation rather than achievement. Our new quarters, however, not only afford much better facilities for work on the collections and for storage, but enable us to separate the various departments and to bring the exhibits into better correlation. Under these improved conditions it should be possible to expand our activities in several directions, to be indicated in a latter portion of this report.

The participation of the museum in the municipal budget exhibit held last October was, in the opinion of many, a potent factor in securing for us favorable consideration. The space occupied consisted of two tables, each $2\frac{1}{2}$ by 5 feet. On these were displayed two photographs of Room 309 in Borough Hall, then tenanted by the museum; six placards, printed for us through the courtesy of the Brooklyn Institute Museum, containing various comparative statistics as to attendance, appropriations, accessions, etc.; a photograph of the Billopp house, and samples of the various educational labels used in our museum. The budget exhibit remained open for one month and was very largely attended.

MUSEUM EXHIBITS

For reasons above given, no conspicuous alterations were made in the permanent exhibits, and no new exhibits were installed until after the removal. A brief synopsis of the present arrangement may be desirable as a matter of record.

First floor: Main hall, historical relics and photographs of Staten Island scenes. Southeast hall, two cases devoted to the Skinner collection of Iroquois Indian implements, to which Mr. Skinner has recently made some additions; two cases of Staten Island Indian relics; one case of local antiques and Revolutionary relics; two cases devoted to the Humphrey loan collection of African ethnology; and a case with a model

of the Billopp house. Northwest hall, three cases containing the Chapin collection of local birds, and the two finely mounted owls recently presented by Mr. Charles Benedict; one case with eggs and nests of birds known to breed on Staten Island; one case of local reptiles and batrachians; one case of marine invertebrates; one case illustrating the life history of the periodical cicada; a large brood of which is due to appear on the island in the summer of 1911; and a fine collection of bird photographs by Mr. Howard H. Cleaves.

Second floor: Main hall, the large mounted eagle. Southeast hall, two cases of exotic shells; one case of exotic birds, and one case each devoted to animal weapons, insect architecture, and protective resemblance. On the walls are displayed a number of exotic butterflies of the genus *Papilio*. Northwest hall, two cases containing a general collection of ores and minerals; one case of German agates; three cases devoted to Staten Island geology; and numerous maps of the island.

There has been only one loan exhibit during the year installed by the committee of the Section of Art. This was of unusual interest and included antique silver jewelry and watches, old fashioned combs, fans, and other objects. It was placed on view in October and remained until the removal to our present building, where it was succeeded by a collection illustrating African ethnology, lent by Mr. and Mrs. George S. Humphrey.

ATTENDANCE

The total attendance during the year has been 4,888 as against 4,992 last year. On account of the removal, however, these figures are not strictly comparable. For the period, slightly in excess of nine months, during which we were in Borough Hall, the attendance was 3,297, as against 4,002 for the same months during the previous year. But the Hudson-Fulton celebration was responsible for a very large attendance in the fall months of 1909, while on the other hand, the number of visitors last January and February was greatly in excess of those in January and February, 1910, even though the Museum was partly dismantled and ready to close.

The April attendance in the new building was very gratifying, being 914 as against only 305 last year. With the approach of fine weather and the school examination, the May record has fallen off, as might be expected. The highest number of visitors, 133, was on May 15, when several classes were brought from Curtis High School by their instructor, Dr. A. J. Grout.

ACCESSIONS

The following table of accessions shows a total of 9,786 specimens, as against 7,370 last year. These figures are not quite exact, as an accurate count of some of the collections received cannot be made until they are catalogued. While the proportion of insects seems unduly large, it must be remembered that this group includes an enormous number of species,

188 STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

and an effort is being made to have our local study collection as complete as possible. The most important gifts during the year were those of Mrs. Walter C. Kerr, including numerous minerals, fossils, books, and a supply of chemicals; Mrs. A. H. McKenzie, including shells, corals, minerals, Indian arrows, and two skins of the quetzal; Mr. William T. Davis, 185 herbarium specimens of violets; Mr. Charles Benedict, numerous insects from Florida and mounted specimens of the barred owl and great horned owl.

ACCESSIONS TO THE MUSEUM AND LIBRARY DURING 1910-1911

Department of Zoology

Insects	7,012 est.	
Shells	1,003 est.	
Other invertebrates	34	
Reptiles and batrachians	12	
Birds and nests	9	
Mammals	2	
Fishes	2	
	<u>8,074</u>	8,074

Department of Botany	249
Department of Geology and Mineralogy	525
Department of Arts and Antiquities	11
Department of Archeology and Anthropology.....	134
Books, Maps, and Photographs.....	487
Miscellaneous	306
	<u>9,786</u>

The expansion of the museum necessitated a considerable increase in the staff, for which provision was duly made in the budget appropriation. Following is the list of new employees, with the dates on which they entered the service of the museum:

Howard H. Cleaves, assistant curator.....	February 1, 1911
Alexander Forsyth, janitor.....	February 11, 1911
Lawrence Liedy, night watchman.....	March 6, 1911
D. M. Van Name, museum guard.....	March 27, 1911

Lawrence Liedy resigned on April 30, and the duties of night watchman are now being performed by a temporary employee until his successor shall have been appointed by the Board.

There has been no change in the honorary staff of the museum.

The curator-in-chief has been very largely occupied with executive duties, especially after active negotiations for the transfer of the museum were under way. Under the direction of the executive committee he pre-

pared specifications for the various contracts involving repairs and alterations to the house, including the electrical, masonry, painting and papering, carpentry, and iron work, and supervised the execution of these contracts. He also prepared a set of plans of the house, on which was plotted the position of all furniture, thus facilitating the work of removal. During the summer the curator-in-chief made a number of field trips in the immediate vicinity, securing a considerable amount of material for the study collections and for use in exchange.

The assistant curator was at first chiefly employed in packing the collections for transfer from Borough Hall and later in arranging the exhibits in the hall of local biology. The excellent mounting of the Tuttle maps and the attractive display of the local bird bulletin, with its dates of arrivals and nesting places, are also the work of Mr. Cleaves. He has more recently been engaged in listing and arranging the collection of reptiles and batrachians. Mention should also be made of six lectures on birds given by Mr. Cleaves at various schools. These lectures, being mostly in the regular Board of Education series, have been well attended, and have afforded an excellent opportunity for advertising the museum and its work.

The museum assistant has continued the work of cataloguing the collections. She reports a total of 5,495 cards completed during the year, distributed as follows: Zoology 607, botany 3,661, geology 7, archeology 1, species catalogue 1,080, donor catalogue 139. 1,208 cards have been stamped for the catalogue, 408 pamphlets stamped and filed, and 167 exhibition labels written. In addition the museum assistant has not only had an increasing amount of clerical work in the museum but has performed many services of this kind for the officers of the Association. She also packed many of the more delicate specimens for transfer and has rearranged most of the books in the library. As the museum assistant is now regularly in charge of the second floor, much of her time is devoted to guard duty, especially in the afternoons.

The janitor and the museum guard have been efficient in their work and earnest in their devotion to the interests of the museum.

Mr. Davis, honorary curator of zoology, has helped us, as heretofore, with his kindly counsel and with many specimens for the collections. He furnished the material for the exhibit showing the life history of the periodical cicada, all being of the brood of 1894. He has also presented the set of violets prepared and determined by Professor Ezra Brainerd, the great authority on this group, thereby enabling our museum to retain its proud position as the owner of the third best collection of violets in the country. Mr. Davis bought and presented to the Association the laurels and rhododendrons now planted in front of the Museum; and he has recently added still further to his gifts by offering to start a subscription for the needed binding of books in our library with the sum of \$25.

The honorary curator of geology, Dr. Hollick, reports that the only

change made in the exhibits under his charge was the replacement of certain specimens in the stratigraphic exhibit by jars containing samples of the sands, soils, gravels, and clays of the island. He has been prevented by his long absence in Washington from taking his usual active part in the work of the museum.

The honorary curator of botany, Dr. Dowell, has little to report in his department. Until new, insect-proof cases can be provided for the herbarium, there is no opportunity for rearrangement or for the addition of mounted sheets.

Dr. Adams, honorary curator of art, was made acting secretary of the Association during the absence of Dr. Hollick and hence has been unable to give as much attention as usual to this department. He personally selected the wall papers used in decorating the Museum and has frequently cheered and aided the curator-in-chief with his advice.

LIBRARY

In my last annual report I referred to our urgent need for certain standard textbooks in various branches of biology. This need is more pressing, in view of the increased number of inquiries received and the importance of securing exact information in preparing our exhibition labels. There is also a large accumulation of pamphlets awaiting binding, and these are constantly deteriorating while they remain unbound. The president of the Association has authorized a subscription fund for this purpose, and the June issue of the MUSEUM BULLETIN will take up the subject in detail.

There are at present 71 institutions on our exchange list. 317 publications were received during the year. Seven are received as gifts from Miss Agnes L. Pollard, Messrs. William T. Davis, Arthur Hollick, and Charles L. Pollard; eight are deposited as loans by Mr. Howard H. Cleaves and Mr. Pollard. Three new exchanges were added, the Bulletin of the Charleston Museum, the University of North Dakota Quarterly, and the Transactions of the Connecticut Academy of Arts and Sciences. The publication of the Augustana College and Theological Seminary was dropped from the exchange list.

In addition to the above regular list 486 separates and special reports and bound books have been received from individuals and institutions during the year.

MUSEUM COOPERATION

The present tendency among museums is toward concentration of effort along special lines, in which affiliated institutions may be of mutual assistance. Thus the Brooklyn Museum, by virtue of the many valuable gifts of shells which it has received, may be said to have made a feature of conchology. Through the courtesy of Dr. Frederic A. Lucas, the

curator-in-chief of the Brooklyn Museum, arrangements were made whereby Miss Helen Aitkin, in charge of this department, has undertaken the naming of our own very excellent collection of shells. In return we shall turn over our duplicates to the Brooklyn Museum.

The American Museum of Natural History has made a special feature of the collection of local insects, taken within a 50-mile radius of New York City. These have been placed in separate cases and have been officially committed to the custody of the New York Entomological Society. During the past winter various groups in the local collection were studied and determined by members of the society, and I have taken the opportunity of having our own material worked over at the same time, in return giving my own services to the American Museum, naming for them the groups in which I am interested.

By far the most important means of cooperation is afforded by the Association of Museums, which holds an annual meeting. At this convention the various curators present papers on matters of museum administration, details of exhibition, methods of mounting, etc., and in the social life of that meeting there is usually an opportunity to discuss matters of mutual benefit. So widely is the value of this association recognized that with very few exceptions the institutions of the country pay the expenses of their curators. In the proceedings of the past two years there will be found several contributions of my own, and the recently published list of American museums has nearly two pages devoted to the museum of the Staten Island Association of Arts and Sciences. I do not hesitate to say that the best ideas developed in our museum have been gained from attendance at the Museums Association meetings.

GENERAL REMARKS

In my various quarterly reports to the Board suggestions and recommendations for the betterment of the museum are made from time to time. Some of these involve merely a slight expenditure for supplies of furniture, easily made from our budget appropriation. Others require the cooperation of our friends in various ways. For example, the suggestion is made by the assistant curator, that the popularity of our exhibit of live animals warrants its increase and that cages containing specimens of the smaller mammals of Staten Island might properly be added. The honorary curator of geology recommends the installation of framed geologic and topographic maps. One of our members suggests that the value of the insect exhibits would be enhanced if cases were added showing metamorphosis in the various orders, as of a caterpillar to a butterfly, etc.; and there is no question that our display of local ornithology would be infinitely more instructive if the bird could be mounted with nest and eggs on the same branch. It has always been my desire to establish traveling school collections, which could be used to illustrate the classroom work in our

local schools, and the present time is especially favorable for starting this new branch of our activity. But it will be noticed that all of these suggestions involve the expenditure of private rather than public funds, even though they inure to public profit. We are, in fact, confronted with this difficulty in almost every effort to develop the museum; and it serves to emphasize the fact that a small endowment fund, to which I have often alluded in reports and addresses before this Association as a desirable thing, has now become an urgent necessity. Other institutions have started their endowment funds before obtaining municipal support; we were given quarters by the city, a budget appropriation, and a special allotment for equipment. Our appropriation has now been more than doubled, a house has been leased exclusively for our use, and there is talk of the erection of a new fire-proof building when the lease expires. Yet the Association has not a dollar invested as a museum fund, and its own annual income is required almost entirely for its publications and ordinary running expenses. The museum should have four funds, not because they are theoretically desirable, but because they are absolutely necessary for our successful development along the lines of the policy already adopted by the Association. One is the library fund, to which reference has already been made. Another is the lecture fund, to enable us to give weekly lectures for the school children throughout the fall, winter, and spring. There should be a fund for the purchase of specimens required for special exhibits, not easily obtainable in the field; and finally there should be a research fund, wherewith the expense of collecting trips could be defrayed, and by which members of the staff might be enabled to visit other institutions occasionally in order to name collections, study methods of preparing exhibits, etc. The annual income for these four funds need not be large; it is probable that for our immediate needs, five hundred dollars would be sufficient, representing an investment of ten or twelve thousand dollars. The method of raising an endowment is entirely within the province of the Board to determine. But it should be borne in mind that as a rule, such funds are obtained by numerous small subscriptions rather than by a few large ones; and this emphasizes the importance of advertising our museum in every possible way, and by making its work known not only on Staten Island but elsewhere. The history of a successful museum is a record of constant endeavor; and the results achieved by some of our smaller institutions, with only modest means at their command, have been entirely satisfactory to those who by their gifts have made these results possible.

Respectfully submitted,
 CHARLES LOUIS POLLARD,
Curator-in-chief.

REPORT OF THE SECRETARY

New members elected during the year.....	16
Resignations	13
Dropped from roll	1
On roll at date	312
Consisting of	
Active members	297
Corresponding members	4
Life members	2
Honorary members	2
Ex officio member	1
Patrons	6
	<hr/>
	312

ARTHUR HOLLICK,
Secretary.

REPORT OF THE TREASURER

INCOME

Balance in hand at date of last annual report.....	\$ 172.87
Since received from membership dues.....	760.00
Subscriptions to PROCEEDINGS	3.00
Subscriptions to dinner, March 25, 1911.....	240.28
Interest on life membership fund.....	3.95
New York City appropriation.....	5,531.18
Notes	945.16
	<hr/>
	\$7,656.44

DISBURSEMENTS

Printing PROCEEDINGS	\$ 261.11
Printing and stationery	36.50
Treasurer's account	15.30
Sundry expense account	360.72
Subscriptions to periodicals	5.00
Expenses of dinner, March 25, 1911.....	266.57
Interest on note	3.43
Notes paid	800.00
Salaries, New York City account.....	3,887.89
Supplies, New York City account.....	1,735.03
	<hr/>
	\$7,371.55
Balance in hand.....	284.89
	<hr/>
	\$7,656.44

ASSETS AND LIABILITIES

CASH ASSETS

Life membership fund, on deposit in savings bank.....	\$ 100.00
Accrued interest on life membership fund, to January 1, 1911...	16.27
Cash on deposit in Corn Exchange Bank.....	168.62
	<hr/>
	\$ 284.89

ADDITIONAL ASSETS

Back dues outstanding.....	\$ 372.00
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LIABILITIES

Estimated dues uncollectable	\$ 150.00
Note	350.00
	<hr/>
Total liabilities	\$ 500.00
Total assets	656.89
	<hr/>
Assets over liabilities	\$ 156.89

C. A. INGALLS,
Treasurer.

REPORT OF THE SECTION OF BIOLOGY

This section has been comparatively inactive during the past season, only three meetings having been held, one at the home of Mr. William T. Davis, chairman of the section, on the evening of October 31, 1910; the second (the annual meeting) in the museum building on April 22, 1911; and the third, May 13, 1911, on which occasion Mr. Charles W. Leng presented a paper on Salt Meadow Beetles (contained in this issue, pp. 153-155).

Although the section has not been as active as usual, it arranged the spring series of three lectures for the benefit of the Association at large as well as the general public. These lectures have proved most satisfactory, having been attended by large audiences. The subjects and dates were as follows:

Saturday, April 22, 1911; With the Seminoles in the Florida Everglades. Mr. Alanson Skinner.

Saturday, April 29, 1911, Wild Flowers of Staten Island. Dr. A. J. Grout.

Saturday, May 6, 1911, The Expression of Emotion in Birds as Shown by the Camera. Mr. Clinton G. Abbott.

WM. T. DAVIS,
Chairman.

REPORT OF THE SECTION OF ART

The Section of Art has held no separate meetings during the year. The regular meeting of the Association on December 17, 1910, was held under its auspices, when an illustrated lecture was given by Dr. Bruno Roselli on the topic Political and Religious Art in Medieval Siena.

The committee on exhibits of the section has taken an active interest, as heretofore, in the art loan collections installed from time to time in the Museum.

J. Q. ADAMS,
Chairman.

REPORT OF THE SECTION OF HISTORICAL RESEARCH

No meetings of the section have been held.

E. C. DELAVAN, JR.,
Chairman.

INDEX

TITLES AND SUBJECTS

	PAGE
Additions to the Flora of Staten Island.....	156
Addition to the List of Staten Island Frogs, An.....	66
Administration	
Change in ex-officio membership of Board of Trustees.....	88
Change of quarters for the museum.....	89, 183
Elections of patrons and members.....	88, 183
Hours of opening for the museum.....	184
Public entertainments	90
Relation with municipal authorities.....	88
Amendments	
Charter	50, 89
Constitution	151, 181
Announcements	
Appointment of a committee on legislation.....	51
City lease of 154 Stuyvesant Place for use of the Association....	150
Introduction of bill amending the charter of the Association...83,	84
Representation in City Budget Exhibit.....	149
Transfer of Supreme Court from Richmond to St. George.....	83
Appointments	
Committees	
On annual prize in natural science.....	182
On arrangements for celebration of reopening of museum....	184
On legislation	51
On tree planting	85
To ex-officio membership in Board of Trustees.....	88
To honorary curatorship of the department of Arts and Antiquities	93
Arlington, Staten Island, Notes on Introduced Plants Collected near..	62
Beetles, Salt Meadow	153
Changes and Inconsistencies in the Spelling of Local Place Names by the United States Geological Survey	109
Cicada on Staten Island between the Years 1894 and 1911, The Seventeen-year	120
Conservation, the National Issue	129
Contributors	
Abbott, Clinton G.	195
Achilles, Louis H.	148
Adams, Bristow S.	108
Adams, John Q.	52, 181, 183
Bayne, Howard R.	181
Beauchamp, William M.	173
Benedict, Charles P.	51

	PAGE
Chapin, James	177
Cleaves, Howard H., 53, 55, 71, 82, 83, 85, 87, 108, 116, 123, 151, 177, 178	
Crampton, Henry E.	150
Cromwell, George	181
Davis, William T.1, 34, 51, 53, 66, 68, 73, 74, 82, 83, 84, 85, 113, 120, 149, 151, 169, 183	
Delavan, Edward C., Jr.37, 51, 183	
Dow, Robert P.	83
Dowell, Carl Philip	49, 144
Dowell, Philip	74, 80, 112, 156, 163, 183
Eaton, Walter P.	80
Ferris, A. W.	181
Freeman, L. W.	150
Gratacap, L. P.	76
Grout, A. J.181, 195	
Hollick, Arthur31, 49, 50, 51, 62, 75, 81, 82, 85, 86, 108, 109, 149, 150, 173-180, 181	
Hooper, Franklin W.	181
Hornaday, William T.	181
Jeffrey, Edward C.176, 179, 180	
King, Mrs. A. M.	84
Leng, Charles W.153, 195	
Lucas, Frederic A.	181
Lutz, Frank E.51, 54	
Markham, Edwin	181
Matthew, William D.51, 54	
Millard, Bailey	175
Miller, W. de W.	177
Nicholson, Thomas	49
Pilcher, Lewis F.	52
Pollard, Agnes L.	151
Pollard, Charles L.51, 54, 81, 83, 85, 108, 128, 151, 152	
Roselli, Bruno	151
Shortt, William Allaire	181
Skinner, Alanson	73, 84, 195
Smith, Samuel McK.	50
Stone, Walter K.	80
Stone, Witmer	74
Tribus, L. L.	181
Van Name, D. M.	83
Whitlock, H. P.	173
Winter, William	80
Wissler, Clark	73
Crooke, John J.: a Staten Island Naturalist.....	169
Disputed Claim of the Proprietors of East Jersey to Staten Island, The	37
Do Not Burn the Woods.....	68

Elections	PAGE
Members	88, 183
Patrons	88
Trustees	86, 182
Ferns, Notes on Some Staten Island	163
Flora of Staten Island, Additions to the	156
Forest Trees, Our	144
Introduced Plants Collected near Arlington, Staten Island, Notes on..	62
John J. Crooke: a Staten Island Naturalist	169
Least Shrew in Captivity, The	116
List of Staten Island Frogs, An Addition to the	66
List of the Macrolepidoptera of Staten Island, New York.....	1
Literature Relating to Staten Island. (See Reviews).....	73-81, 173-180
Local Place Names, Changes and Inconsistencies in the Spelling of, by the United States Geological Survey	109
Long Island, New York, Miscellaneous Observations on the Natural History of	113
Macrolepidoptera of Staten Island, List of the	1
Meetings	
Association	49, 82, 148, 181
Section of Biology	53, 108
Miscellaneous Observations on the Natural History of Long Island, N. Y.	113
Museum and Library	
Accessions	95, 187
Attendance	98, 187
Catalogue	96, 189
Contributors	99
Exchanges added during 1909-1910.....	101
Exhibits	93, 186
Library	100
Loan exhibits	93, 102, 187
Museum cooperation	190
Publications received	97, 99
Staff	95
Nature Study in the Public Schools, The Possibilities and Limita- tions of	123
Necrology	
Edward Benjamin Arnold	50
Jos. J. Barth	88
Edward L. Bogert	88
John M. Carrère	183
Hobart Clark	183
Lester Williams Clark, Jr.	50, 88
John J. Crooke	182
David Hamilton Gildersleeve	50, 88
John F. Gould	88

	PAGE
Thomas O. Horton	183
Charles W. Hunt	183
Algernon Knox Johnston	50, 88
Walter Craig Kerr	86, 88
Horace W. Patterson	183
David Fremont Simonson	50, 88
John M. Tilley	88
Notes on Introduced Plants near Arlington, Staten Island.....	62
Notes on Some Staten Island Ferns	163
Notes on Specimens Recently Collected in the Serpentine Area of Staten Island	31
Notes on the White-breasted Nuthatch	34
Notes, references, and brief mention	
Aaron Burr. Note written and signed by	149
Arrow points from Mariner's Harbor	150
Blue-winged warbler, near Huguenot, Staten Island, nest of....	53
Brook lamprey, <i>Ammocoetes branchialis</i> (L.), from Ramsey, New Jersey, specimen of	82
Charles Darwin, portrait of	85
<i>Cicada sayi</i> Grossbeck from Helmetta and Jamesburg, New Jersey	53
Confederate States of America, \$1,000 six per cent. bond of....	83
<i>Daucus carota</i> L., inflorescence of	51
European cricket, <i>Gryllus domesticus</i> L., in a farmhouse.....	82
Exercises held in connection with the opening of the new museum building	181
Flora and fauna of Yaphank, N. J., notes on the.....	82
Fresh water sponges from Yaphank, N. J., specimens of.....	82
<i>Gordius</i> worms, specimens of	82
Hammerstones from Teaneck, New Jersey, specimens of.....	82
Hermit thrush, <i>Turdus aonalaschkae pallasii</i> (Cab.), colony of...	82
Killdeer breeding near Pleasant Plains, Staten Island.....	53
Kingfishers, <i>Ceryle alcyon</i> (L.), experiences in photographing...	85
Milk snakes found in road by St. Andrew's churchyard.....	152
<i>Orchelimum pulchellum</i> Davis from Helmetta and Jamesburg, New Jersey	53
Peculiar perforated stone found at Arrochar	150
Photographs and notes of geologic section exposed in cut for retaining-wall on Jay Street	82
Photographs showing forest fires near Oakwood, Staten Island...	108
Plants from ballast ground near Arlington, Staten Island, speci- mens of	108
Quartz crystals from limonite deposit on Todt Hill.....	150
Robert P. Dow collection of butterflies	83
Short-eared owl, <i>Asio accipitrinus</i> , from Fort Wadsworth, Staten Island	108
<i>Smilax rotundifolia</i> L., from Yaphank, specimens of.....	82

	PAGE
Staten Island soils, sands, silts, and clays	51
Wild bird photography as a recreation	87
Yellow gerardia, <i>Dasystoma flava</i> (L.) Wood, punctured by bees..	82
Nuthatch, Notes on the White-breasted	34
Opening of the new museum building, exercises held in connection with	181
Photographic work with Sandpipers at Wolfe's Pond, Two Seasons'..	55
Plants Collected near Arlington, Staten Island, Notes on Introduced..	62
Possibilities and Limitations of Nature Study in the Public Schools, The	123
Proceedings of the Section of Biology	53, 108
Public Schools, The Possibilities and Limitations of Nature Study in the	123
Records of Meetings	49, 82, 148, 181
Redwing Changes its Nesting Site, The	71
Reports	
Committees	
Accessions	104, 185
Annual prize for work in natural science	49, 148
Auditing	91
Concerts and lectures	50
Executive	91, 185
Museum	104, 185
Publication	91, 185
Women's auxiliary	104, 185
Curator-in-chief	92, 186
Officers	
Secretary	102, 193
Treasurer	103, 193
Sections	
Art	105, 195
Biology	105, 194
Historical Research	107, 195
Trustees	88, 183
Resolutions	
Amending Article II of the Constitution	151
Appointing a committee to consider amendments to the charter of the Association enabling the city to erect a museum building....	50
Appointing a committee to consider tree planting on the island....	85
Approving amendment to the state game laws.....	84
Approving circular upon the destruction of the woodlands by fire..	85
Authorizing representatives in state legislature to introduce bills amending charter of the Association	182
Reviews	73-81, 173-180
Aboriginal Place Names of New York	173
Acquisition by New York City of the Larger Two Water Systems of Staten Island	174

	PAGE
Affinities of <i>Geinitzia gracillima</i> , The	180
Affinities of the Genus <i>Yezonia</i> , On the	179
Annual Report of the Board of Education of the City of New York	75
Anthropological Papers of the American Museum of Natural History	73
Bird of the Silent Wing, The	178
Birds of New Jersey, The	74
Fossil Flora of New York and Vicinity, The	175
Geology of the City of New York	76
Kingfisher at Home, The	177
List of New York Mineral Localities	173
New <i>Prepinus</i> from Martha's Vineyard, A	176
Notes in Connection with Specimens Recently Obtained from the Serpentine of Staten Island	79
Passing of the Chestnut Tree, The	175
Running Away from Folks	80
Staten Island Association of Arts and Sciences. Public Museum..	175
Staten Island Bird Notes and Pictures	178
Staten Island Museum, The	81
Toads of Northeastern United States, The	177
Violets of Staten Island, The	74
Winter, William, the Dean of American Dramatic Critics.....	80
Salt Meadow Beetles	153
Sandpipers at Wolfe's Pond, Two Seasons' Photographic Work with..	55
Serpentine Area of Staten Island, Notes on Specimens Recently Collected in the	31
Seventeen-year Cicada on Staten Island between the Years 1894 and 1911, The	120
Spelling of Local Place Names, Changes and Inconsistencies in the, by the United States Geological Survey	109
Staten Island, Additions to the Flora of	156
Staten Island Ferns, Notes on Some	163
Staten Island Frogs, An Addition to the List of	66
Staten Island, List of the Macrolepidoptera of	1
Staten Island Naturalist, John J. Crooke: a.....	169
Staten Island, Notes on Specimens Recently Collected in the Serpentine Area of	31
Staten Island, The Disputed Claim of the Proprietors of East Jersey to Trees, Our Forest	144
Two Seasons' Photographic Work with Sandpipers at Wolfe's Pond..	55
White-breasted Nuthatch, Notes on the	34
Wolfe's Pond, Two Seasons' Photographic Work with Sandpipers at..	55
Woods, Do Not Burn the	68

SCIENTIFIC AND COMMON NAMES

	PAGE		PAGE
Abbotana clemataria	28	Anisota stigma	13
Achatodes zeae	19	virginiensis	13
Achroanthos unifolia	157	Anomis erosa	21
Actinotia ramosula	16	Antholite schist	33, 82
Adelphagrotis prasina	17	Anticarsia gemmatilis	23
Adoneta spinuloides	29	Anytus privatus	18
Aethaloptera intextata	27	Apaecasia defluata	27
Agaristidae	15	detersata	27
Agate, German	187	Apantes arge	14
Agelaeus phoeniceus	178	nais	14
Agnomonis anilis	23	phalerata	14
Agrimonia parviflora	157	virgo	14
Agrotis badinodis	17	virguncula	14
violaris	17	vittata	14
ypsilon	17	Apatela americana	15
Ailanthus	3	clarescens	15
Alabama argillacea	21	connecta	15
Alcis atrolinaria	27	dactylina	15
Alder	6, 15	funeralis	15
Allotria elonympha	22	hamamelis	15
Alsophila pomataria	26	hasta	15
Alypia octomaculata	15	hastulifera	15
Alyssum, sweet	64	impleta	15
Amaranthus deflexus	64	increta	15
graecizans	63	innotata	15
spinosus	63	interrupta	15
American toad	177	lithospila	15
Ammalo eglenensis	14	lobeliae	15
tenera	14	modica	15
Ammocoetes branchialis	82	morula	15
Ampelophaga choerilus	11	noctivaga	15
myron	11	oblinita	15
Amphibolite schist	33	ovata	15
Amphion nessus	10	retardata	15
Anagoga pulveraria	27	tritona	15
Anaplodes remotaria	27	vinnula	15
Ancyloxypha numitor	9	xyliniformis	15
Angleworm	117	Apatelodes torrefacta	24
Ania limbata	28	Aplodes mimosaria	27
Anisota	115	Apple	62
rubicunda	13	Aragonite	33

	PAGE		PAGE
Arctidae	13	Birch	130
Argynnis aphrodite	3	white	146
bellona	3	Bird, cedar	114
cybele	3	Bembidium contractum	154
idalia	3	Black ash	159
myrina	3	Blackbird, red-winged	71, 72, 108, 178
Aristolochia serpentaria	157	Black cherry	145
Arsilochia albovenosa	15	duck	127
Asclepias quadrifolia	157	walnut	145, 146
tuberosa	7	Blarina parva	116
Ash	131, 145, 146	Bleptina caradrinalis	24
black	159	Bluebird	124
Asio accipitrinus	108	Blue-winged teal	127
Aspidium boottii	164	Bobolink	71, 179
cristatum clintonianum..	163	Bombycilla cedrorum	114
cristatum × spinulosum.	166	Bomolocha abalinealis	24
goldieanum	166	baltimoralis	24
Aster	2	bijugalis	24
acuminatus	157	manalis	24
undulatus loriformis	157	sordidula	24
Atlanticus dorsalis	114	Boott's fern	163, 164
Atriplex patula	63	Box elder	145
Autographa basigera	20	Box turtle	114
biloba	20	Brachyphyllum	179
brassicae	20	macrocarpum	179
falcigera	21	Brassica arvensis	64
precaionis	20	campestris	64
verruca	20	Brephos infans	28
Automeris io	13	Brook lamprey	82
Baileya ophthalmica	16	Brown creeper	35
Balsa malana	16	Bruchus hibisci	154
tristrigella	16	Bryaxis abdominalis	154
Barini	154	cavicornis	155
Barn owl	179	Bufo americanus	177
Barred owl	179	fowleri	177
Basilona imperialis	8	Butterfly, cabbage	7
Basswood	130, 145	monarch	2
Beach plum	113	Butterfly weed	7
Bean	62		
castor oil	64	Caberodes confusaria	28
kidney	64	majoraria	28
Beech	145, 146	Cabbage butterfly	7
Beetles	153	Calcite	32
water	154	Callosamia angulifera	12
Bembecia marginata	30	promethea	12

	PAGE		PAGE
<i>Calocampa curvimacula</i>	19	Cedar, red	115
<i>Calpe canadensis</i>	20	western red	131
<i>Camelina sativa</i>	64	Cedar bird	114
Carabidae	153	<i>Celama triquetra</i>	29
<i>Caradrina miranda</i>	16	<i>Celiptera frustulum</i>	23
<i>Carex annectens</i>	157	<i>Celtis occidentalis</i>	5
<i>canescens</i>	158	Ceratocampidae	13
<i>canescens disjuncta</i>	157	<i>Ceratomia amyntor</i>	12
<i>costellata</i>	158	<i>undulosa</i>	12
<i>setacea ambigua</i>	157	<i>Cerura occidentalis</i>	25
<i>virescens</i>	158	<i>scitiscrita multiscrita</i> ..	25
<i>Carolina sphinx</i>	11	<i>Ceryle alcyon</i>	85
Carrot, wild	51	<i>Chamaelirium luteum</i>	158
<i>Cassia marylandica</i>	8, 158	<i>Chamyris cerintha</i>	21
Castor oil bean	64	Chat, yellow-breasted	126
<i>Catalpa, hardy</i>	146	<i>Chenopodium anthelminticum</i> ..	63
<i>Catocala amatrix</i>	22	<i>vulvaria</i>	63
<i>amatrix nurus</i>	22	Cherry	130
<i>amica</i>	22	black	145
<i>antinympa</i>	22	Chestnut	130, 146
<i>briseis</i>	22	Chickadee	35, 125
<i>cara</i>	22	<i>Chlaenogramma jasminearum</i> ..	12
<i>cerogama</i>	22	<i>Chloridea virescens</i>	20
<i>concupiens</i>	22	<i>Chlorite schist</i>	33
<i>epione</i>	22	<i>Chlorochlamys chloroleucaria</i> ..	27
<i>gracilis</i>	22	<i>Chorophilus triseriatus</i>	66
<i>grynea</i>	22	Chrysomelidae	154
<i>habilis</i>	22	<i>Chrysophanus hypophlaeas</i>	6
<i>ilia</i>	22	<i>thoe</i>	6
<i>innubens</i>	22	<i>Chytolita morbidalis</i>	23
<i>judith</i>	22	<i>petrealis</i>	24
<i>minuta</i>	22	<i>Chytonix palliatricula</i>	16
<i>muliercula</i>	22	Cicada, periodical	187
<i>neogama</i>	22	red-eyed	121
<i>paleogama</i>	22	sayi	53
<i>parta</i>	22	seventeen-year	120, 151
<i>piatrix</i>	22	<i>Cingilia catenaria</i>	27, 114
<i>residua</i>	22	<i>Cirrhophanus triangulifera</i> ...	20
<i>retracta</i>	22	<i>Cistodus carolina</i>	114
<i>robinsonii</i>	22	<i>Citheronia regalis</i>	13
<i>tristis</i>	22	<i>Citrullus citrullus</i>	65
<i>ultronia</i>	22	Clay, Cretaceous	176
<i>unijuga</i>	22	<i>Cleome pentaphylla</i>	64
<i>vidua</i>	22	<i>spinosa</i>	64, 158
<i>Catopsilia eubule</i>	7	<i>Cleora larvaria</i>	27
Cedar	145	<i>pampinaria</i>	27

	PAGE		PAGE
Clivina striatopunctata	153	Datana perspicua	24
Club gourd	65	Datura	11
Cochliidiidae	29	Daucus carota	51
Cochlidion biguttata	29	Deidamia inscriptum	11
y-inversa	29	Deilephila lineata	11
Coffee tree	146	Deilinea liberaria	27
Colias caesonia	I, 7	Deptalia insularia	26
eurytheme	7	Diabase	173
philodice	7	Diacrisia latipennis	14
Collinsonia	19	virginica	14
Commelina nudiflora	63	Diaportha parasitica	175
Conocephalid	113	Diphthera fallax	16
Conocephalus lyristes	113	Diplotaxis muralis	64
triops	113	Dipterygia scabriuscula	16
Conurus imbricatus	154	Dog's head butterfly	7
Cossidae	30	Dogwood	35
Cosymbia lumenaria	26	Doryodes bistriaris	21
Cottonwood	131	Douglas fir	131
Crab	125	Drasteria crassiuscula	22
Crambodes talidiformis	16	erechtea	21
Creeper, brown	35	Drepana arcuata	36
Cressonia juglandis	12	Dryopteris clintoniana	163
Cretaceous clay	176	clintoniana \times goldiana ..	164
Cricket, European	82	clintoniana \times intermedia ..	164, 165
Cricket frog	67	cristata \times intermedia, 164, 165	165
Crow	72, 127	cristata \times marginalis	165
Crustacea	125	cristata \times spinulosa	166
Cryptomeriopsis	179	goldiana	166
Crystals, quartz	150	goldiana celsa	164
Cucullia asteroides	19	intermedia	167
convexipennis	19	intermedia \times marginalis ..	166, 167
Cucumis melo	65	marginalis \times spinulosa ..	167
Cucurbita pepo	65	pittsfordensis	166, 167
Cymatophora wauaria	27	spinulosa	167
Cypress	130	Duck, black	127
Cyrtophyllus perspicillatus	114	semidomesticated	123
Daisy	71	tree	127
Danais plexippus	2	wild	113
Dasystoma flava	82	wood	127
Datana angusii	24	Dutchman's pipe vine	8
contracta	24	Dyspteris abortivaria	26
drexelii	24	Eagle	187
integerrima	24	golden	127
major	24		
ministra	24		

	PAGE		PAGE
Earthworm	117, 119	Eudamus pylades	10
Eclipta alba	158	tityrus	10
erecta	158	Eudeilinea herminiata	25
procumbens	158	Eudule mendica	26
Ecpantheria deflorata	14	meridiana	26
Ectropis crepuscularia	27	Eueretagrotis perattenta	17
Elder, box	145	Eugonobapta nivosaria	28
Elm	130, 145, 146	Euherrichia mollissima	21
white	145	European cricket	82
English sparrow	11, 123, 146	Eupanychis spinosae	20
Ennomos magnarius	28	Euparthenos nubilis	23
subsignarius	28	Eupatorium maculatum	158
Enstatite	81	serotinum	158
Eois inductata	26	trifoliatum	158
Eosphropteryx thyatiroides ..	20	Euphorbia pilulifera	64
Epimecis virginaria	27	Euplexia lucipara	16
Epizeuxis aemula	23	Euptoieta claudia	3
americalis	23	European larch	145
lubricalis	23	Eurycyrtarus confederata	29
Erannis tiliaria	27	Eustroma diversilineata	26
Erastria amaturaria	27	Eustrotia apicosa	21
Erebus odora	23	carneola	21
Estigmene acraea	14	concinimacula	21
congrua	14	malaca	21
Eubaphe aurantiaca	13	muscoscula	21
forma brevicornis..	13	synochitis	21
forma ferruginosa	13	Euthisanotia grata	20
forma rubicundaria	13	unio	20
immaculata	13	Eutolyte rolandi	17
Euchaetias egle	14		
Euchalcia contexta	20	Falcaria bilineata	26
Euchlaena amoenaria	28	Feltia annexa	17
johnsonaria	28	gladiaria	17
obtusaria	28	jaculifera	17
serrata	28	subgothica	17
Euchoeca albovittata	26	venerabilis	17
inornata	26	Feniseca tarquinius	6
Eucirroedia pampina	19	Fentonia marthesia	25
Euclea chloris	29	Fern, Boott's	163, 164
delphinii querceti	29	Goldie's	166
indetermina	29	Fibrous asbestos	33
Euclidia cuspidata	22	serpentine	33
Eucroptocnemis fimbriaris	18	Fir, Douglas	131
Eucymatoge intestinata	26	Fishhawk	127
Eudamus bathyllus	10	Five-spotted sphinx	11
lycidas	10	Fowler's toad	177

	PAGE		PAGE
<i>Fraxinus nigra</i>	159	Gum, sour	34, 114
Frog, cricket	67	sweet	145
pickerel	177	Hackberry	145
Pickering's	67	tree	5
swamp tree	66	<i>Hadena arctica</i>	16
<i>Gaberasa ambigua</i>	24	devastatrix	16
<i>Galgula hepara</i>	21	dubitans	16
Geese, semidomesticated	123	impulsa	16
<i>Geinitzia</i>	180	lignicolor	16
<i>gracillima</i>	180	miseloides	16
(Sequoia) <i>reichenbachii</i> ..	179	modica	16
Geometridae	26	passer	16
Geometrid moths	114	semicana fractilinea	16
<i>Gerardia</i> , yellow	82	turbulenta	16
<i>Glaea inulta</i>	20	verbascoides	16
<i>sericea</i>	20	<i>Haematopsis grataria</i>	26
<i>viatica</i>	20	<i>Halisidota caryae</i>	14
<i>Gluphisia septentrionalis</i>	25	tessellaris	14
Golden eagle	127	<i>Haploa clymene</i>	14
Goldie's fern	166	Harbor gull	123
<i>Gonodontis duaria</i>	28	Herring gull	123
<i>hypochraria</i>	28	<i>Harpyia borealis</i>	25
<i>obfirmaria</i>	28	<i>cinerea</i>	25
<i>Gordius</i> worms	82	<i>Harrisimemna trisignata</i>	15
<i>Gortyna nictitans</i>	19	<i>Harrisina americana</i>	30
<i>velata</i>	19	Hawk	116
Gourd	62	fish	127
club	65	sparrow	127
Grape	62	<i>Helianthus annuus</i>	65
<i>Graphiphora alia</i>	18	<i>Heliomata cycladata</i>	27
<i>Grapta comma</i>	3	<i>Heliophila albilinea</i>	18
<i>interrogationis</i>	3	<i>multilinea</i>	18
<i>j-album</i>	4	<i>pseudargyria</i>	18
<i>progne</i>	4	<i>unipunctata</i>	18
Grasses	63, 156	<i>Heliopsis armiger</i>	20
Grasshopper	113	<i>Heliotropium europaeum</i>	64
Gray screech owl	178	<i>Hemaris thysbe</i>	10
squirrel	115	<i>thysbe ruficaudis</i>	10
Green-winged teal	127	<i>Hemerocampa leucostigma</i>	25
<i>Gryllus domesticus</i>	82	<i>Hemileuca maia</i>	13
<i>Gueneria basiaris</i>	27	Hemlock	145
Gull, harbor	123	Hesperidae	9
herring	130	<i>Heterocampa bilineata</i>	25
Gum	130	<i>guttivitta</i>	25
red	130	<i>manteo</i>	24

	PAGE		PAGE
<i>Heterocampa umbrata</i>	24	Katydid	114
<i>Heterogramma pyramusalis</i> ...	24	Kidney bean	64
<i>Heterophleps triguttaria</i>	26	Killdeer	53
Hickory	130, 145	Kingfisher	85, 177
nut	35	Koniga maritima	64
shagbark	144, 146		
High tide bush	154	<i>Lacosoma chiridota</i>	29
<i>Himella intracta</i>	18	Lacosomidae	29
<i>Homoptera lunata</i>	23	<i>Lagenaria lagenaria</i>	65
<i>obliqua</i>	23	<i>Lagoa crispata</i>	30
<i>unilineata</i>	23	Lamprey, brook	82
<i>Homopyralis contracta</i>	21	<i>Lapara bombycoides</i>	12
Honey locust	145	<i>Laphygma frugiperda</i>	17
<i>Hormisa litophora</i>	23	<i>frugiperda obscura</i>	17
Hornblende	33	Larch	131
Horsechestnut	145	European	145
Horsehair snakes	82	Lasiocampidae	25
<i>Hottonia inflata</i>	159	Least sandpiper	57, 58
House sparrow	123	Least shrew	116, 117, 118, 119
<i>Hyamia perditalis</i>	21	Leopard moth	30
<i>sexpunctata</i>	21	<i>Lepidium medium</i>	64
<i>Hydria undulata</i>	26	<i>Libythea bachmanni</i>	5
<i>Hydriomena latirupta</i>	26	Libytheidae	5
<i>multiferata</i>	26	Lice, woolly plant	6
<i>Hyparpax aurora</i>	25	<i>Lilium canadense</i>	159
<i>Hypena humuli</i>	24	<i>philadelphicum</i>	159
<i>Hyperaeschra stragula</i>	24	<i>Limenitis archippus</i>	5
<i>Hyperitis amicarua</i>	28	<i>ursula</i>	5
<i>Hyphantria cunea</i>	14	<i>ursula albofasciata</i>	5
<i>textor</i>	14	Limestone	77
<i>Hypocala andremona</i>	23	Limonite	150
<i>Hypopitys americana</i>	159	Liparidae	25
<i>lanuginosa</i>	159	<i>Liriodendron tulipifera</i>	12
<i>Hyppa xylinoides</i>	16	<i>Lissorhoptrus simplex</i>	154
		<i>Lithacodia bellicula</i>	21
<i>Ianassa lignicolor</i>	25	<i>Lithacodes fasciola</i>	29
<i>Ilex laevigata</i>	159	Lobster	125
<i>Ilysanthes attenuata</i>	159	Locust	144
<i>Inula helenium</i>	159	honey	145
<i>Isia isabella</i>	14	Lodgepole pine	131
<i>Isochaetes beutenmülleri</i>	29	Long-billed marsh wren	59
<i>Iva frutescens</i>	154	Long-leaved pine	130
		<i>Lophodonta angulosa</i>	24
Joe-Pye weed	158	<i>ferruginea</i>	24
Junco	124	Luna moth, scarlet-margined ..	13
<i>Junonia coenia</i>	5	<i>Lycaena comyntas</i>	6

	PAGE		PAGE
<i>Lycaena ladon</i>	6	Marmolite	32
<i>ladon forma lucia</i>	6	Marsh mallow	154
<i>ladon forma marginata</i> ..	6	Marsh wren, long-billed	59
<i>ladon forma violacea</i> ...	6	Meadow mice	117
<i>Lycaenidae</i>	5	Megalopygidae	30
<i>Lycia cognataria</i>	27	Melalopha inclusa	24
<i>Lycomorpha pholus</i>	13	Melanolophia canadaria	27
<i>Lycopodium</i>	156	Meliopotis jucunda	22
<i>clavatum</i>	156	<i>limbolaris</i>	22
<i>complanatum</i>	156	Melitaea phaeton	3
<i>inundatum</i>	156	Melittia satyriniformis	30
<i>lucidulum</i>	156	Memphothrus asilipennis	30
<i>obscurum</i>	156	<i>simulans</i>	30
<i>Lycopus communis</i>	160	Mesoleuca intermediata	26
<i>rubellus</i>	160	<i>lacustrata</i>	26
<i>virginicus</i>	160	<i>vasaliata</i>	26
<i>Macaria aequiferaria</i>	27	Metanema inatomaria	28
<i>Macrolepidoptera</i>	31	<i>textrina</i>	28
Magnesite	32	Metathorasa monitifera	21
Magnolia	131	Metoponia obtusa	21
Mahogany	144	Metrocampa praegrandaria ...	28
<i>Malacosoma americana</i>	25	Mice, meadow	117
<i>disstria</i>	25	Microcoelia dipteroides	15
Mallow, marsh	18	<i>dipteroides oblitterata</i> ...	16
<i>Mamestra adjuncta</i>	18	Milk snake	152
<i>anguina</i>	18	Mimulus alata	160
<i>congermana</i>	18	Misogada unicolor	25
<i>cristifera</i>	18	Monarch butterfly	2
<i>detracta</i>	18	Monotropia hypopitys	159
<i>distincta</i>	18	Morrisonia confusa	18
<i>grandis</i>	18	<i>sectilis</i>	18
<i>latex</i>	18	Mosquito	55, 154, 178
<i>legitima</i>	18	Moth	117
<i>lorea</i>	18	<i>geometrid</i>	114
<i>mediata</i>	18	<i>leopard</i>	30
<i>picta</i>	18	<i>scarlet-margined luna</i> ...	13
<i>renigera</i>	18	Moths, Noctuid	11
<i>subjuncta</i>	18	Mouse, whitefooted	118
<i>trifolii</i>	18	Muskmelon	62, 65
Maple	130, 144, 145	Nacophora quernaria	27
Norway	145	Nadata gibbosa	24
red	146	Nemoria subroceata	27
sugar	130, 144, 145, 146	Neonympha canthus	5
white	30	<i>eurytris</i>	5
<i>Marasmius inficita</i>	21	Nephelodes minians	18

	PAGE		PAGE
Nisoniades brizo	10	Owl, barred	59, 179, 188
icelus	10	gray screech	178
juvenalis	10	great horned	188
martialis	10	saw-whet	178
persius	10	short-eared	108, 178
Noctua bicarnea	17	Pachnobia fishii	17
clandestina	17	manifesta	17
c-nigrum	17	Paectes abrostoloides	21
normaniana	17	oculatrix	21
pecta	17	Paleacrita vernata	26
smithii	17	Palthis angulalis	24
Noctuidae	15	Pamphila cernes	9
Noctuid moths	11	fusca	10
Nola ovilla	29	hobomok	9
Nolidae	29	leonardus	9
Norway maple	145	manataaqua	9
spruce	144, 175	massasoit	9
Notodontidae	24	metacomet	10
Nuthatch	125	metea	9
red-breasted	35	mystic	9
white-breasted	34, 51, 108	ocola	10
Nyctobia fusifasciata	26	otho	9
Nymphalidae	2	peckius	9
Oak	115, 131, 145	pontiac	10
red	145, 146	sassacus	9
white	136, 144, 145, 146	verna	10
Ogdoconta cinereola	21	viator	10
Oligia festivoidea	16	zabulon	9
grata	16	Panapoda rufimargo	23
Oligomerus obtusus	154	Pangrapta decoralis	21
Ophiobolus doliatus triangulus	152	Panicum huachucae	160
Orange	62	latifolium molle	160
Osage	146	lindheimeri	160
Orchelimum	114	porterianum	160
pulchellum	53	nitidum	160
Oreta rosea	25	pubescens	160
Orthodes crenulata	18	Paonias excaecatus	12
cynica	18	myops	12
vecors	18	Papaipema astuta	19
Orthofidonia vestaliata	27	baptisiae	19
Orthosia bicolorago	19	cataphracta	19
helva	19	cerussata	19
Osage orange	146	duplicata	19
Owl	116, 187	inquaesita	19
barn	178	impecuniosa	19

	PAGE		PAGE
<i>Papaipema marginidens</i>	19	<i>Philobia enotata</i>	27
<i>moeseri</i>	19	<i>Philometra metonalis</i>	23
<i>nitela</i>	19	<i>Philosamia cynthia</i>	12
<i>purpurifascia</i>	19	<i>Phiprosopus callitrichoides</i>	21
<i>Papilio</i>	187	<i>Phlegethontius quinquemacu-</i>	
<i>ajax</i>	8	<i>lata</i>	11
<i>philenor</i>	8	<i>rustica</i>	11
<i>polyxenes</i>	9	<i>sexta</i>	11
<i>thoas</i>	9	<i>Phoberia atomaris</i>	23
<i>troilus</i>	9	<i>Phobetron pitheciun</i>	29
<i>turnus</i>	9	<i>Pholisora catullus</i>	10
<i>Papilionidae</i>	9	<i>Pholus achemon</i>	11
<i>Paragrotis bostoniensis</i>	17	<i>pandorus</i>	11
<i>detersa</i>	17	<i>Phragmatobia fuliginosa</i>	14
<i>messoria</i>	17	<i>Phycoides tharos</i>	3
<i>redimicula</i>	18	<i>Physalis pubescens</i>	64
<i>tessellata</i>	18	<i>Pickerel frog</i>	177
<i>Parallelia bistriaris</i>	23	<i>Pickering's frog</i>	67
<i>Paraphia subatomaria</i>	27	<i>Pieridae</i>	6
<i>subatomaria deplanaria</i> ..	27	<i>Pieris napi oleracea</i>	6
<i>Passenger pigeon</i>	169, 170	<i>protodice</i>	6
<i>Pea</i>	62	<i>protodice vernalis</i>	6
<i>Pectoral sandpiper</i>	61	<i>rapae</i>	7
<i>Pedicellaria pentaphylla</i>	64	<i>Pigeon, domesticated</i>	123
<i>Pentstemon digitalis</i>	160	<i>passenger</i>	169, 170
<i>Percnoptilota fluviata</i>	26	<i>Pine, lodgepole</i>	131
<i>Peridroma incivis</i>	17	<i>long-leaved</i>	130
<i>margaritosa</i>	17	<i>pitch</i>	114
<i>occulta</i>	17	<i>red</i>	144
<i>Perigea epopea</i>	16	<i>Scotch</i>	144, 145, 146
<i>sutor</i>	16	<i>sugar</i>	131
<i>vecors</i>	16	<i>white</i>	131, 144, 145, 146
<i>xanthioides</i>	16	<i>yellow western</i>	131
<i>Periodical cicada</i>	187	<i>Pitcher plant</i>	170
<i>Pero honestarius</i>	28	<i>Plagiomimicus pityochromus</i> ..	20
<i>marmoratus</i>	28	<i>Plagodis alcoolaria</i>	28
<i>Persimmon tree</i>	7	<i>fervidaria</i>	28
<i>Petalium seriatum</i>	154	<i>serinaria</i>	28
<i>Petrophora ferrugata</i>	26	<i>Plant lice, woolly</i>	26
<i>Phalacridae</i>	154	<i>Plathypena scabra</i>	24
<i>Phalaenostola larentioides</i>	21	<i>Platypterygidae</i>	25
<i>Phaseolus vulgaris</i>	64	<i>Platysenta videns</i>	16
<i>Phigalia olivacearia</i>	27	<i>Plover, ringneck</i>	58
<i>titea</i>	27	<i>semipalmated</i>	58
<i>Philhydrus hamiltoni</i>	154	<i>Plum, beach</i>	113
		<i>Plusia aerea</i>	20

	PAGE		PAGE
<i>Plusia balluca</i>	20	Red-breasted nuthatch	35
<i>Plusiodonta compressipalpis</i> ...	20	Red cedar	115, 144
<i>Poaphila quadrifilaris</i>	23	-eyed cicada	121
<i>Poplar</i>	145	gum	130
white	130, 145	maple	146
<i>Porosagrotis vetusta</i>	17	oak	145, 146
Potato	62	pine	144
<i>Prepinus</i>	176	screech owl	178
<i>statenensis</i>	176	-winged blackbird ...	71, 72,
<i>viticetensis</i>	176	108, 178, 179	
<i>Priocycla armantaria</i>	28	Redwood	132
<i>decoloraria</i>	28	<i>Remigia repanda</i>	23
<i>Prionoxystus querciperda</i>	30	<i>repanda marcida</i>	23
<i>robiniae</i>	30	<i>Renia discoloralis</i>	24
<i>Prodenia commelinae</i>	16	<i>factiosalis</i>	24
<i>ornithogalli</i>	16	<i>salusalis</i>	24
<i>Prolimacodes scapha</i>	29	<i>sobrialis</i>	24
<i>Prunus maritima</i>	113	<i>Rheumaptera hastata</i>	26
<i>Psaphidia grotei</i>	17	<i>Rhodophora florida</i>	20
<i>Pselaphid</i>	154, 155	<i>Rhynchagrotis alternata</i>	17
<i>Pselaphidae</i>	155	<i>anchocelioides</i>	17
<i>Pseudothyatira cymatophoroides</i>	25	<i>brunneicollis</i>	17
<i>expultrix</i>	25	<i>Rhynchophora</i>	154
<i>Psychidae</i>	29	<i>Rhyphobius marinus</i>	154
<i>Psychomorpha epimenis</i>	20	<i>Ricinus communis</i>	64
<i>Psystegania pustularia</i>	27	Ringneck plover	58
<i>Ptelea trifoliata</i>	9	<i>Rivula propinqualis</i>	21
<i>Ptinidae</i>	154	<i>Roeselia minuscula</i>	29
Pumpkin	62, 65	<i>Roripa palustris</i>	64
<i>Pyrameis atalanta</i>	4	<i>Sabulodes arcasaria</i>	28
<i>cardui</i>	I, 5	<i>lorata</i>	28
<i>huntera</i>	4	<i>transversata</i>	28
<i>Pyrgus tessellata</i>	10	<i>Samia cecropia</i>	12
<i>Pyromorpha dimidiata</i>	30	<i>Sanderling</i>	61
<i>Pyromorphidae</i>	30	<i>Sandpiper, least</i>	57, 58
<i>Pyrophila pyramidoides</i>	16	<i>pectoral</i>	61
<i>Pyroxenite</i>	80	<i>semipalmated</i>	58, 59
<i>Pyrrhia umbra</i>	19	<i>solitary</i>	58, 60
Quail	170	<i>spotted</i> ...	55, 56, 57, 60, 179
Quartz crystals	150	<i>white-rumped</i>	61
<i>Rachela bruceata</i>	26	<i>Sanninoidea exitiosa</i>	30
<i>Rana palustris</i>	177	<i>Sassafras</i>	145
<i>Raphanus raphanistrum</i>	64	<i>Saturniidae</i>	12
<i>Raphia frater</i>	15	<i>Satyridae</i>	5
		<i>Satyrus alope</i>	5

	PAGE		PAGE
Saw-whet owl	178	Sesia corni	30
Saxifraga pennsylvanica	160	pictipes	30
Scarlet-margined luna moth ..	13	pyri	30
Scepsis fulvicollis	13	tipuliformis	30
Schinia arcifera	20	Sesiidae	30
brevis	20	Seventeen-year cicada	120, 151
constricta	20	Shagbark hickory	144, 146
lynx	20	Shale	32
marginata	20	Short-eared owl	178
nundina	20	Short-tailed shrew	116
thoreauii	20	Shrew, least	116, 117, 118, 119
trifascia	20	Shrew, short-tailed	116
Schist	32	Sibine stimulea	29
amphibolite	33	Sinapis alba	64
chlorite	33	Sisymbrium altissimum	160
Schizura badia	25	Sisyrosea textula	29
ipomoeae	25	Sitones	154
leptinoides	25	Sitta carolinensis	34
semirufescens	25	Smerinthus geminatus	12
unicornis	25	Smilax rotundifolia	82
Sciagraphica heliothidata	27	Snake, milk	152
Sciurus carolinensis	115	Snakes, "horsehair"	82
Scolecocampa liburna	21	Snipe, surf	61
Scoliopteryx libatrix	19	Soapstone	31, 32
Scopelosoma devia	19	Solanum nigrum	65
moffatiana	19	Solitary sandpiper	58, 60, 61
morrisoni	19	Sour gum	34
sidus	19	Sparrow, English	11, 123, 146
Scotch pine	144, 145, 146	house	123
Screech owl, gray	178	Sparrowhawk	127
Scydmaenidae	155	Sphecodina abbotii	11
Seaweed	2	Sphenophorus	154
Sedges	63, 156	Sphex ichneumonea	114
Selidosema umbrosarium	27	Sphida obliqua	19
Semiophora elimata	17	Sphingidae	10, 11
Semipalmated plover	58	Sphinx, Carolina	11
sandpiper	58, 59	chersis	12
Sequoia	180	drupiferarum	12
gracillima	180	eremitus	12
Serpentine...31, 32, 33, 51, 79, 80,		five-spotted	11
82, 173		gordius	12
fibrous	33	kalmiae	11
Sesamum indicum	65	plebeius	12
Sesban macrocarpa	64	Sponge, fresh-water	82
Sesia acerni	30	Spotted sandpiper, 55, 56, 57, 60, 179	
bassiformis	30	Spragueia leo	20

	PAGE		PAGE
Spruce	131, 145	Thecla melinus	5
Norway	144, 145, 146	niphon	6
Squirrel	35	titus	6
gray	115	Theretra tersa	11
Staphylinidae	154	Therina endropiaria	28
Starling, European	123	fervidaria	28
Strix varia	179	Thistle	11
Sugar maple	130, 144, 145, 146	Thlaspi arvense	161
pine	131	Thrush, hermit	82
Sumac	4, 67	Thyatiridae	25
Sunflower	65	Thyridae	30
Surf snipe	61	Thyridopteryx ephemeræ-	
Swallow	2	formis	29
Swamp tree frog	66	Thyris lugubris	30
white oak	35	Tibicen septendecim ..	120, 121, 122
Swan, semidomesticated.	123	Titmice	124
Sweet alyssum	64	Toad	177
gum	145	Fowler's	177
Sycamore	130	Tolyte velleda	25
Symmerista albifrons	24	Tomato	62
Synchlora aerata	27	Tortricidea pallida	29
rubrifrontaria	27	testacea	29
Syneda graphica	22	Trap rock	31
Synelys alabastaria	26	Tree duck	126
ennucleata	26	frog, swamp	66
Syntomidae	13	Tricholita signata	18
Syssaura infensata	28	Triptogon modesta	12
		Tropaea luna	12
Tadpole	125	Tulip tree	12, 145, 146
Talc	32, 33	Turdus aonalaschkae pallasii..	82
Tamarack	145	Turnip	62
Tarache candefacta	21	Turtle	125
delecta	21	box	114
erastrioides	21		
Taraxacum erythrospermum... 161		Utetheisa bella	13
Teal, blue-winged	127		
green-winged	127	Vanessa antiopa	4
Telea polyphemus	13	milberti	4
Tephroclystis miserulata	26	Viola affinis	161
Terias lisa	8	brittoniana × papilionacea	162
nicippe	1, 7	brittoniana × sororia ...	161
Tetracis crocallata	28	conspersa	161
Thecla augustus	1, 6	emarginata	161, 162
calanus	5	emarginata × sororia ...	162
damon	6	eriocarpa	161
irus	6	hirsutula	75, 161

	PAGE		PAGE
<i>Viola incognita</i>	161	Wild duck	113
<i>labradorica</i>	161	Willow, white	145
<i>pectinata</i>	161	Wood duck	127
<i>scabriuscula</i>	162	Woodpecker	125
<i>triloba</i>	161	Woodwardia virginica	168
Violet	74	Woolly plant lice	6
Walnut	130	Wren	124
black	145	long-billed marsh	58
Warbler, blue-winged	53	<i>Xanthopastis timais</i>	20
Wasp	114	<i>Xanthotype crocataria</i>	28
Waterbug	125	<i>Xylina antennata</i>	19
Watermelon	62, 65	<i>bethunei</i>	19
Webworm	146	<i>laticinerea</i>	19
Weed, butterfly	7	Yellow-breasted chat	126
Western red cedar	132	Yellow pine	130
White birch	146	western pine	131
elm	145	<i>Yezonia</i>	179
maple	30, 145	<i>Ypsi undularis</i>	23
oak	136, 144, 145, 146	<i>undularis aeruginosa</i>	23
oak, swamp	35	<i>undularis umbripennis</i> ..	23
pine	131, 144, 145, 146	<i>Zale horrida</i>	23
poplar	130, 145	<i>Zanclognatha cruralis</i>	23
willow	146	<i>laevigata</i>	23
White-breasted nuthatch ...	34, 35,	<i>marcidilinea</i>	23
51, 108		<i>Zeuzera pyrina</i>	30
-footed mouse	118		
-rumped sandpiper	61		

Publications of the Association

1. PROCEEDINGS OF THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND

These PROCEEDINGS were printed in octavo numbers, partly in leaflet and partly in pamphlet form, from November 10, 1883, to June 3, 1905, and were included in nine volumes, separately indexed.

They may be obtained by members and patrons at \$1.25 per volume. To others the price per volume is \$2.50.

Single numbers of back volumes may be obtained at 10 cts. each, except the following, for which a uniform price of 50 cts. each will be charged:

Special No. 21, Vol. V, No. 5, March 14, 1896, "Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 56, and map by Chas. W. Leng.

Special No. 22, Vol. VII, No. 15, March 10, 1900. "Colonel Francis Lovelace and His Plantations on Staten Island." Edward C. Delavan, Jr. Pamph., pp. 33, pls. i-iv.

Special No. 23, Vol. VIII, No. 25, October, 1903, "Supplement to Staten Island Names, Ye Olde Names and Nicknames." Wm. T. Davis. Pamph., pp. 22 and map.

Only a limited number of complete sets of the older volumes are now in stock, and orders for these will be filled in the order of application. The right is reserved to withdraw any part or numbers from sale at any time.

2. PROCEEDINGS OF THE STATEN ISLAND ASSOCIATION OF ARTS AND SCIENCES

These PROCEEDINGS are printed in octavo parts, four parts to a volume. They contain the business and scientific records of the meetings of the Association and are sent free to all members and patrons in good standing.

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VOLUME I, including Title Page, Table of Contents, and Index, contains: Parts I-IV, June 1905-May 1907, pp. 1-136.

VOLUME II, with Title Page, Table of Contents, and Index, contains: Parts I-IV, October 1907-May 1909, pp. 179-251.

VOLUME III, Part I, October-December, 1909, pp. 1-56, issued April 28 1911.

Part II, January-May, 1910, pp. 57-108, issued May 2, 1911.

Part III, October 1910-February 1911, pp. 109-152, issued February 15, 1912.

The Act of Incorporation, Constitution and By-Laws, etc. (Pamph. 8vo, pp. i-xxv, 1906) and the special "Memorial Number," issued in commemoration of the celebration of the 25th anniversary of the organization of the Natural Science Association of Staten Island (Pamph., 8vo, pp. i-xxxvii, 1907), will be sent free on application.

3. THE MUSEUM BULLETIN

Monthly octavo leaflets, containing official notices of meetings of the Association and descriptive items concerning the museum exhibits. Begun in August 1908. Current numbers sent free on application. Back numbers 2 cents each.

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